

ENERGY AND WATER, AND RELATED AGEN- CIES APPROPRIATIONS FOR FISCAL YEAR 2007

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

[CLERK'S NOTE.—At the direction of the subcommittee chairman, the following statements received by the subcommittee are made part of the hearing record on the Fiscal Year 2007 Energy and Water Development Appropriations Act.]

DEPARTMENT OF DEFENSE—CIVIL

DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS

PREPARED STATEMENT OF THE CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

The United States Army Corps of Engineers Tropicana and Flamingo Washes Flood Control Project, Las Vegas, Nevada.—\$15,000,000, Construction appropriations, which includes appropriations for work performed pursuant to Section 211 of the Water Resources Development Act of 1996.

Presented herewith is testimony in support of \$15,000,000 for the construction appropriation necessary for the U.S. Army Corps of Engineers to continue the Tropicana and Flamingo Washes flood control project in Clark County, Nevada, which includes up to \$9,000,000 to reimburse the non-Federal sponsors, Clark County and the Clark County Regional Flood Control District, for work performed in advance of the Federal project pursuant to Section 211 of the Water Resources Development Act (WRDA) of 1996. The President's fiscal year 2007 Civil Works budget request to Congress identifies \$12,400,000 for this project. It is imperative that we receive the requested Federal funding to protect residents of the rapidly growing Las Vegas Valley in Southern Nevada from devastating floods.

The Las Vegas Valley continues to experience unprecedented growth. In the past 20+ years, people have moved into our area from all parts of the Nation to seek employment, provide necessary services, retire in the Sunbelt, and become part of this dynamic community. Approximately 6,000 people relocate to the Las Vegas Valley every month of the year. Currently the population exceeds 1.8 million. The latest statistics show that more than 25,000 residential units are built annually. Once all of these factors are combined, the result is that the Las Vegas Valley continues to be one of the fastest-growing metropolitan areas in the Nation.

The Federal project being constructed by the Corps of Engineers (Corps) is designed to collect flood flows from a 174-square mile contributing drainage area. The Corps' project includes three debris basins, five detention basins, 28 miles of primary channels, and a network of lateral collector channels. The debris basins collect flood flows from undeveloped Federal lands at the headwaters of the alluvial fans and trap large bedload debris before it enters the channels and causes erosion damage. The detention basins greatly reduce the magnitude of the flood flows so that the flows can be safely released and conveyed through the urbanized area at non-damaging rates. A primary system of channels collects outflows from the debris and

detention basins and conveys these floodwaters through our urban area. Lateral collector channels, which are funded locally, collect runoff from smaller developed watersheds and deliver it to the primary channels. Since flood flow over the alluvial fans, which ring the Las Vegas Valley, is so unpredictable in terms of the direction it will take during any given flood, all of the components of the Corps' plan are critical.

Torrential rains deluged the Las Vegas Valley the morning of July 8, 1999, causing widespread drainage problems and major damages to public and private properties. Some of the greatest rainfall depths occurred over the southwest portions of the Las Vegas Valley resulting in significant flows in the Tropicana and Flamingo Washes. The runoff from this intense rainfall caused widespread street flooding and record high flows in normally dry washes and flood control facilities. The news media reported two deaths during this flood event, one of which was a drowning in the Flamingo Wash. Damages to public property caused by this storm were estimated at \$20,500,000. The President declared Clark County a Federal disaster area on July 19, 1999, recognizing the severity of damages to public and private properties. Significant damages could have been avoided if the Corps' Tropicana and Flamingo Washes Project had been fully implemented. However, those features of the Corps' project that were completed did help to mitigate damages.

On August 19, 2003 another flash flood hit the Las Vegas Valley and damaged hundreds of homes and businesses. Storms of this magnitude only reinforce the need to expeditiously build all flood control projects in the Las Vegas Valley.

In the winter of 2004–2005, the area experienced heavier than normal rainfall amounts. That winter brought twice the area's average annual rainfall causing flooding in along the Virgin and Muddy Rivers in Clark County, Nevada. Several areas in the Las Vegas Valley also experienced drainage problems. The flood control features built as part of the Tropicana and Flamingo Washes Project helped to protect vast areas of our community.

The Feasibility Report for this project was completed in October 1991, and Congressional authorization was included in the WRDA of 1992. The first Federal appropriation to initiate construction of the project became available through the Energy and Water Resources Development Appropriations Bill signed into law by the President in October 1993. The Project Cooperation Agreement (PCA) was fully executed in February 1995. Federal appropriations to date have totaled \$269,345,000 (allocations \$226.7 million), allowing continued project construction. The total cost of the flood control portion of the project is currently estimated at \$336,342,000, higher than originally anticipated primarily due to the delay in Federal appropriations which has resulted in increases in real estate and construction costs.

The local community had constructed certain elements of the Corps' plan prior to the execution of the PCA. These project elements required modifications in order to fit into the Corps' plan and fulfill the need for a "total fan approach" to the flooding problems in the Las Vegas Valley. The work performed by the non-Federal sponsors, construction of Red Rock Detention Basin and Flamingo Detention Basin, has been accounted for in Section 104 credits and totals \$9,906,000.

We have already realized some benefits from construction of flood control features on the Federal project. We have removed 18.1 square miles of flood zones from Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps. This was accomplished through the completion of the Red Rock Detention Basin Modifications, the Blue Diamond Detention Basin, and the F-1 and F-2 Debris Basins and Outfall Channels. We anticipate removal of an additional 0.7 square miles of flood zones as a result of recently completed portions of the Federal project and even more removed when the entire project is complete.

Both the Clark County Regional Flood Control District and Clark County are looking forward to the completion of construction of this flood control project in fiscal year 2007.

The non-Federal sponsors are requesting \$15,000,000 for both the continued construction and reimbursement to the local sponsors of this project. Funding at this level will allow the Corps of Engineers to complete the construction of the last project feature, the F-4 Debris Basin and Channel.

In order to provide the required flood protection in a timely fashion, the non-Federal sponsors are implementing certain features in advance of the Federal Government pursuant to Section 211 of WRDA 1996. An amendment to the PCA was fully executed on December 17, 1999, that formalizes the provisions of Section 211 of WRDA 1996. Section 211(f) of WRDA 1996 recognized the Tropicana and Flamingo Washes project as one of eight projects in the Nation to demonstrate the potential advantages and effectiveness of non-Federal implementation of Federal flood control projects. The work funded by the non-Federal sponsors and completed is substantial and includes features that were designed by the non-Federal sponsors and con-

structed by either the Federal Government or the non-Federal sponsors. To date, \$13.5 million has been reimbursed.

The non-Federal sponsors are requesting up to \$9 million of the \$15 million for reimbursement under Section 211. This amount is requested in light of the language contained in the fiscal year 2000 Energy and Water Development Bill, Senate Report 106-58, which states in part, "The Committee expects . . . every effort to even out reimbursement payments to lessen future budgetary impacts." The non-Federal sponsors' contributions to the project are for the primary purpose of providing flood protection as quickly as possible.

In summary, the Tropicana and Flamingo Washes project is an important public safety project designed to provide flood protection for one of the fastest growing urban areas in the Nation. We ask that the committee provide the Secretary of the Army with \$15 million, in fiscal year 2007, in order to facilitate the completion of construction of this critical flood control project and use up to \$9 million of the \$15 million to reimburse the non-Federal sponsors the Federal proportionate share of the work completed by the sponsors in advance of the Federal Government.

The committee is aware that flood control measures are a necessary investment required to prevent loss of life and damages to people's homes and businesses. Flood control is a wise investment that will pay for itself by preserving life and property and reducing the probability of repeatedly asking the Federal Government for disaster assistance. Therefore, when balancing the Federal budget, we believe a thorough analysis will show that there is substantial future Federal savings in disaster assistance that supports sufficient appropriations through the Civil Works Budget.

PREPARED STATEMENT OF THE VENTURA PORT DISTRICT

The Ventura Port District respectfully requests that the Congress increase the administration's request from \$1,700,000 to \$3,370,000 for inclusion in the fiscal year 2007 Energy and Water Development Appropriations Bill for the U.S. Army Corps of Engineers maintenance dredging of the Ventura Harbor Federal channel and sand traps.

BACKGROUND

Ventura Harbor, homeport to 1,500 vessels, is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The harbor opened in 1963. Annual dredging of the harbor entrance area is necessary in order to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U.S. Army Corps of Engineers to the maintenance of the entrance structures and the dredging of the entrance channel and sand traps (Public Law 90-483, section 101).

The harbor presently generates more than \$50 million in gross receipts annually. That, of course, translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry which landed over 25 million pounds of seafood in 2005 (the harbor is consistently amongst the top ten commercial fishing ports in the United States), and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the commercial vessels transporting the nearly 100,000 visitors per year to and from the Park islands offshore, operate out of the harbor. All of the operations of the harbor, particularly those related to commercial fishing, the support boats for the oil industry, and the visitor transport vessels for the Channel Islands National Park are highly dependent upon a navigationally adequate entrance to the harbor.

OPERATIONS AND MAINTENANCE NEEDS

Maintenance Dredging

It is estimated that \$3,370,000 will be required to perform the maintenance dredging of the harbor's entrance channel and sand traps during fiscal year 2007. Because of reduced funding in fiscal year 2006 more than 350,000 cubic yards of material was not removed by the Corps of Engineers contractor during the current dredging effort and thus the request is absolutely essential to the continued operation of the harbor in fiscal year 2007.

PREPARED STATEMENT OF THE ARKANSAS RIVER BASIN INTERSTATE COMMITTEE

Mr. Chairman and members of this distinguished committee, my name is Lew Meibergen. I am Chairman of the Board of Johnston Enterprises headquartered in Enid, Oklahoma. It is my honor to serve as Chairman of the Arkansas River Basin Interstate Committee, members of which are appointed by the governors of the great States of Arkansas, Colorado, Kansas, Missouri, and Oklahoma.

In these times of war on terrorism, homeland defense and needed economic recovery, our thanks go to each of you, your staff members and the Congress. Your efforts to protect our Nation's infrastructure and stimulate economic growth in a time of budget constraints are both needed and appreciated.

Our Nation's growing dependence on others for energy, and the need to protect and improve our environment, make your efforts especially important. Greater use and development of one of our Nation's most important transportation modes—our navigable inland waterways—will help remedy these problems. At the same time, these fuel-efficient and cost-effective waterways keep us competitive in international markets. In this regard, we must maintain our inland waterway transportation system. We ask that the Congress restore adequate funding to the Corps of Engineers budget—\$6.7 billion in fiscal year 2007—to keep the Nation's navigation system from further deterioration. If this catastrophic problem is not addressed immediately, we are in real danger of losing the use of this most important transportation mode.

As Chairman of the Interstate Committee, I present this summary testimony as a compilation of the most important projects from each of the member States. Each of the States unanimously supports these projects without reservation. I request that the copies of each State's individual statement be made a part of the record, along with this testimony.

Equus Beds Aquifer—Kansas

Equus Beds Aquifer Storage and Recovery Project.—Continuation of a City of Wichita, Groundwater Management District No. 2 and State of Kansas project to construct storage and recovery facilities for a major groundwater resource supplying water to more than 20 percent of Kansas municipal, industrial and irrigation users. The project will capture and recharge in excess of 100 million gallons per day and will also reduce on-going degradation of the existing groundwater by minimizing migration of saline water. Federal authorization of the project through House Bill 1327 introduced last year or through similar legislation this year. Construction Phase One is scheduled for completion in 2007. Continued Federal funding is requested for fiscal year 2007 consistent with this legislation which will authorize funding for 25 percent of the project cost up to a maximum of \$30 million during the construction phases.

Arkansas River Navigation Improvements

Mr. Chairman, Public Law 108–137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on each barge, which will reduce the amount of fuel consumed and emissions released. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of least tern islands through beneficial use of dredged material.

Therefore, we request \$40 million to construct dike structures to scour out the channel, and dredge necessary areas for improving the depth of the channel. This investment will increase the cost competitiveness of this low-cost, environment-friendly transportation mode and help us combat the loss of industry and jobs to overseas.

Tow Haulage Equipment—Oklahoma

We request funding of \$5.0 million to initiate the installation of tow haulage equipment on the locks located along the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System. Total cost for these three locks is \$5 million. This project will involve installation of tow haulage equipment on W.D. Mayo Lock and Dam No. 14, Robert S. Kerr Lock and Dam No. 15, and Webbers Falls Lock and Dam No. 16, on the Oklahoma portion of the waterway. The tow haulage equipment is needed to make transportation of barges more efficient and economical by allowing less time for tows to pass through the various locks.

The testimony we present reveals our firm belief that our inland waterways and the Corps of Engineers' efforts are especially important to our Nation in this time

of trial. Transportation infrastructure like the inland waterways need to be operated and maintained for the benefit of the populace. Without adequate annual budgets, this is impossible.

Mr. Chairman, members of this committee, we respectfully request that you and members of your staff review and respond in a positive way to the attached individual statements from each of our States which set forth specific requests pertaining to those States.

We sincerely appreciate your consideration and assistance.

ARKANSAS

PREPARED STATEMENT OF PAUL LATTURE II, CHAIRMAN FOR ARKANSAS

Mr. Chairman and members of the committee, thank you for the opportunity to present testimony to this most important committee. I serve as Executive Director for the Little Rock Port Authority and as Arkansas Chairman for the Interstate Committee. Other committee members representing Arkansas, in whose behalf this statement is made, are: Mr. Scott McGeorge, President, Pine Bluff Sand and Gravel Company, Pine Bluff; Mr. N.M. "Buck" Shell, CEO, Five Rivers Distribution in Van Buren and Fort Smith; Mr. Jack Long, General Manager, Logistic Services, Inc., Port of Little Rock; and Mr. Jeff Pipkin, President & CEO of the Russellville Area Chamber of Commerce and Director of the Arkansas Valley Alliance for Economic Development.

We call to your attention four projects on the McClellan-Kerr Arkansas River Navigation System (the "System") that are especially important to navigation and the economy of this multi-State area: Arkansas River 12-Foot Channel, Little Rock Port, Backlog of Channel and Structure Maintenance, and the Arkansas-White Rivers Cut-Off Study.

Arkansas River's 12-Foot Channel

Mr. Chairman, Public Law 108-137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on each barge which will reduce the amount of fuel consumed and emissions released. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of least tern islands through beneficial use of dredged material.

Therefore, we request \$40,000,000 to continue the work towards achieving the 12-foot navigation channel as noted in Public Law 108-137. Corps of Engineers capability levels on this project are currently \$20,000,000 in both the Tulsa and Little Rock Districts. The goal of completing this project in 4 years at the capability levels of the Corps will increase the cost competitiveness of this low cost-environment friendly transportation method and help us combat the loss of industry and jobs to overseas.

Little Rock Port

We recognize the significant reduction in new work and understand the need to combat the Global War on Terrorism. We also recognize the need to look for economic advantages where the needs of the government cross with the good of public entities to serve both needs. We believe a prime example of this effort would be to utilize Section 107 of the River and Harbors Act of 1960 (Public Law 86-645) in the Continuing Authorities Program which would allow the disposal of dredge disposal material to be utilized by the Little Rock Port for beneficial fill material.

Therefore, \$7.6 million is requested for this project. This project will compliment the goal of Homeland Security by providing a safe, mid-America environment for shipping while complimenting other Federal investments, including the 12-foot channel project by providing completion of a major economic development engine.

Backlog of Channel Structure Maintenance

We request \$10 million Operation and Maintenance Budget which is urgently needed for critical repairs to damaged and deteriorated dikes and revetments to maintain channel alignment and provide original channel configuration while reducing the need for dredging.

More than a decade of neglect to our navigation structures while funding the construction of Montgomery Point Lock & Dam has created a critical backlog of channel structure work that threatens the viability of the McClellan-Kerr Arkansas River Navigation System.

Arkansas-White Rivers Cutoff Study

A cutoff is developing between the Arkansas and White Rivers which, if not corrected, could have dramatic adverse effects on the navigation system as well as significant bottomland hardwoods and pristine environment that provides unique wildlife habitat in southeast Arkansas.

Unless corrected, it is inevitable that a major cutoff will occur negatively impacting navigation on the river, significantly increasing siltation and dredging requirements and, at worst, cutting off the lower end of the Navigation System from the Mississippi River.

We request, for the benefit of the entire system, \$300,000 to protect the Navigation System from incurring significant increases in dredging, hazardous navigation conditions, and to preclude a devastating loss of habitat in bottom land hardwoods in the Big Island region between the Arkansas River, the White River and the Mississippi River. This pristine habitat is being threatened from the meandering of these rivers while also adversely impacting the Navigation System. The funds are greatly needed to complete the study and do the required environmental documentation.

In addition to these three vital requests, we urge you to continue to support funding for the construction, and operation and maintenance of the McClellan-Kerr Arkansas River Navigation System which provides low-cost and dependable transportation for farm products, construction aggregates, raw materials and finished products important to our Nation's economic recovery.

It is also most important that you continue construction authority of the McClellan-Kerr Project until remaining channel stabilization problems identified by the Little Rock District Corps of Engineers have been resolved. The Corps needs to develop a permanent solution to the threat of cutoffs developing in the lower reaches of the navigation system and to use environmentally sustainable methods under the existing construction authority.

Mr. Chairman, we appreciate the work of this essential committee and thank you for your efforts that contribute so much to the social and economic well-being of the United States of America.

We fully endorse the statement presented to you today by the Chairman of the Arkansas River Basin Interstate Committee and urge you to favorably consider these requests that are so important to the economic recovery of our region and Nation.

KANSAS

PREPARED STATEMENT OF GERALD H. HOLMAN, CHAIRMAN FOR KANSAS

Mr. Chairman and members of the committee, I am Gerald H. Holman, Senior Vice President of the Wichita Area Chamber of Commerce, Wichita, Kansas and Chairman of the Kansas Interstate Committee for the Arkansas Basin Development Association (ABDA).

The Kansas ABDA representatives join with our colleagues from the other Arkansas River Basin States to form the multi-State Arkansas Basin Development Association. We fully endorse the summary statement presented to you by the Chairman of the Arkansas River Basin Interstate Committee.

Public Law 108-137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on barges, which will reduce the amount of fuel consumed and emissions released. Funds in the amount of \$7.0 million were allocated in fiscal year 2005 with \$1.5 million used to complete the Feasibility Study and Environmental Impact Statement with the other \$5.5 million used on engineering, design, and construction activities. In conjunction with the deepening project the Corps is preparing a Basin Wide Master Plan that will include an integrated major maintenance construction and operational maintenance prioritized list for investment opportunities. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of Least Tern islands through beneficial use of dredged material.

Therefore, we request \$40 million to maintain the authorized depth by constructing dike structures to minimize dredging and dredging only necessary areas. This investment will increase the cost competitiveness of this low cost, environment-friendly transportation method and help us combat the loss of industry and jobs to overseas.

The critical water resources projects in the Kansas portion of the Arkansas River Basin are identified below. The projects are environmental and conservation in nature and all have regional and/or multi-State impact. We are grateful for your past commitment to these projects.

We ask for your continued support for this important Bureau of Reclamation project on behalf of the Wichita/South Central Kansas area:

Equus Beds Aquifer Storage and Recovery Project.—This is the continuation of a Bureau of Reclamation project jointly endorsed by the City of Wichita, Groundwater Management District No. 2 and the State of Kansas. This model technology has proven the feasibility of recharging a major groundwater aquifer supplying water to nearly 600,000 irrigation, municipal and industrial users. The demonstration project has successfully recharged more than 1 billion gallons of water from the Little Arkansas River. The project is essential to help protect the aquifer from on-going degradation caused by the migration of saline water.

The Equus Beds are vital to the surrounding agricultural economy. Also, environmental protection of the aquifer, which this strategic project provides, has increasing importance to ensure quality water for the future since south central Kansas will rely to an even greater extent on the Equus Beds aquifer for water resources.

The south-central Kansas economy including the Wichita MSA represents:

- More than 20 percent of the State's employment.
- More than one-third of the State's manufacturing employment and payroll.
- At least 20 percent of the State personal income.

The quality of life and economic future for more than 20 percent of the State's population and economy is dependent upon the availability of reliable, high quality water resources from the Equus Beds.

The State of Kansas supports the project as the needed cornerstone for the area agricultural economy and for the economy of the Wichita metropolitan area. The Chief Engineer of Kansas has authorized full-scale construction.

The aquifer storage and recovery project is a vital component of Wichita's comprehensive and integrated water supply strategy. The full scale design concept for the aquifer storage and recovery project calls for a multi-year construction program. Phase One is estimated to cost approximately \$25 million and is scheduled for completion in 2007. The total project involving the capture and recharge of more than 100 million gallons of water per day is estimated to cost \$130 million over 10 years. This is substantially less costly, both environmentally and economically, when compared with reservoir construction or other alternatives.

We are grateful for your previous cost share funding during the demonstration phase, as a compliment to funds provided by the City of Wichita. As we enter the construction phase, we request continued Congressional support in two ways:

- House Bill 1327 was passed by the House of Representatives last year. The Senate passed a very similar bill, Senate Bill 1025. This legislation, or similar legislation, would authorize the project and also provide cost share funding up to 25 percent of the project cost to a maximum of \$30 million. We request your support of this legislation authorizing the Aquifer Storage and Recovery Project as a Federal project and directing the Bureau of Reclamation to participate in its final design and construction to completion.
- Through continued cost share funding of the full-scale Aquifer Storage and Recovery Project within the limits of House Bill 1327 or similar legislation for fiscal year 2007.

The Arkansas River Basin is a treasure that must be protected for future generations. However, we are experiencing decline in water quality due to sediment and nutrient loading. The quality of the water in the Arkansas River and its tributaries, including the numerous reservoirs in the system, is a reflection of its watershed and land use practices. It is imperative that the subbasins within the system are studied using the watershed approach and that protective remedies are identified and implemented to reverse the continuing decline in water quality. We recommend adding the following high priority watershed studies to the fiscal year 2007 budget:

- Walnut River (El Dorado Lake) Watershed Feasibility Study.*—A reconnaissance study was conducted in July 2000 by the USACE, Tulsa District, which identified ecosystem restoration as a primary concern in the Walnut Basin. The Kansas Water Office entered into an agreement with the USACE to begin a Walnut River Basin Ecosystem Restoration Feasibility Study for the entire basin.

Following the initial phase of the feasibility study, it was decided that focusing the study to a smaller geographic area would make more efficient use of existing local, State, and Federal resources. The project was re-scoped to focus study efforts on protection and restoration of El Dorado Lake and its contributing watershed.

Public water supply storage in El Dorado Lake is owned by the City of El Dorado and represents an important future regional water supply source for the Walnut Basin. The reservoir and its watershed have been designated by the Kansas Department of Health and Environment as high priority for Total Maximum Daily Load (TMDL) implementation for eutrophication (nutrients) and siltation. Fecal coliform bacteria is another high priority TMDL pollutant. Because of the importance of protecting both water quality and quantity in El Dorado Lake, and to more effectively target limited resources, KWO has partnered with the City of El Dorado to address long-term protection and restoration needs for the reservoir and its watershed, in cooperation with other local, State and Federal agencies.

Study efforts include addressing identified opportunities to reduce sedimentation in El Dorado Lake and meet the watershed total daily maximum load (TMDL) issues of sediment and eutrophication for the purpose of preserving existing water supply storage, restoring riparian and aquatic habitat in the lake and watershed.

The fiscal year 2006 budget for this project in the amount of \$200,000 is for continuation of the feasibility study. We support the President's proposed fiscal year 2007 budget which includes \$80,000 for completion of the feasibility study in September 2007.

—*Grand (Neosho) Basin Reconnaissance Study.*—A need exists for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. A Federal interest has been determined from the reconnaissance study as a result from a Congressional add in fiscal year 2003 and another add was appropriated in fiscal year 2004. The Reconnaissance Report has been approved. Feasibility Cost Share Agreements will be executed in 2006. The study would support management efforts by Kansas and Oklahoma agencies to address watershed and reservoir restoration issues in the Grand Lake Watershed. Local interest exists for ecosystem restoration projects and flood damage reduction projects. We request funding in the amount of \$450,000 in fiscal year 2007.

Grand Lake Feasibility Study.—A need exists to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A study authorized by the Water Resources Development Act of 1996 was completed in September of 1998 and determined that if the project were constructed based on current criteria, additional easements would be required. Section 449 of the WRDA of 2000 directed the Secretary to evaluate backwater effects specifically due to flood control operations on land around Grand Lake and authorizes a feasibility study at full Federal cost if the Secretary determines that Federal actions have been a significant cause of the backwater effects. The Tulsa District is preparing a letter report which will be submitted to the ASA(CW) for a determination on proceeding with a full federally financed feasibility study. If the ASA(CW) determines that Federal actions have been a significant cause of the flooding, feasibility study activities would be initiated at full Federal expense. Since Grand Lake is an integral component of a system flood control operation consisting of 11 principal reservoir projects in the Arkansas River basin, changes in the operations of the project or other upstream changes could have a significant impact on flood control, hydropower and navigation operations in the Grand (Neosho) River system and on the Arkansas River Basin system, as well. A feasibility study is necessary to determine the most cost-effective comprehensive solution to the real estate inadequacies. We urge you to provide \$500,000 to fund feasibility studies for this important project in fiscal year 2007 and to direct the Corps of Engineers to execute the study at full Federal expense. This project has been a Congressional add for the past 4 years, but there are no funds in the fiscal year 2007 President's budget request to continue this project.

Continuing Authorities Programs.—We support funding of needed programs including the Small Flood Control Projects Program (Section 205 of the 1948 Flood Control Act, as amended), Aquatic Ecosystem Restoration (Section 206 of the 1996 Water Resources Development Act, as amended), Ecosystem Restoration (Section 1135 of the 1986 Water Resources Development Act, as amended) as well as the Emergency Streambank Stabilization Program (Section 14 of the 1946 Flood Control Act, as amended). Smaller communities in Kansas (Iola, Liberal, McPherson, Augusta, Parsons, Altoona, Kinsley, Newton, Arkansas City, Coffeyville and Medicine Lodge) have previously requested assistance from the Corps of Engineers under the Section 205 and Section 14 programs. The City of Wichita also requests funding through these programs to address flooding problems. We urge you to support an increase of these programs to the \$65 million programmatic limit for the Small Flood Control Projects Program, \$35 million for Aquatic Ecosystem Restoration, \$35

million for the Ecosystem Restoration Program and \$25 million for the Emergency Streambank Stabilization Program.

The Planning Assistance to States Program under section 22 of the Water Resources Development Act of 1974, as amended, provides Federal funding to assist the States in water resource planning. The State of Kansas is grateful for previous funding under this program which has assisted small Kansas communities in cost sharing needed resource planning as called for in the Kansas State Water Plan. We request continued funding of this program at the \$10 million programmatic limit which will allow the State of Kansas to receive the \$500,000 limit.

Finally, we are very grateful that both the Corps of Engineers and Bureau of Reclamation have the expertise needed for the development and protection of water resources infrastructure. It is essential to have the integrity and continuity these agencies provide on major public projects. Your continued support of these vital agencies, including funding, will be appreciated. Our infrastructure must be maintained and where needed, enhanced for the future.

Mr. Chairman and members of these committees, thank you very much for the dedicated manner in which you have dealt with the Water Resources Programs and for allowing us to present our funding requests.

OKLAHOMA

PREPARED STATEMENT OF JAMES M. HEWGLEY, JR., CHAIRMAN FOR OKLAHOMA

Mr. Chairman and members of the committee, I am James M. Hewgley, Jr., Oklahoma Chairman of the Arkansas River Basin Interstate Committee, from Tulsa, Oklahoma.

It is my privilege to present this statement on behalf of the Oklahoma members of our committee in support of adequate funding for water resource development projects in our area of the Arkansas River Basin. Other members of the committee are: Mr. Ted Coombes, Tulsa; Mr. A. Earnest Gilder, Muskogee; Mr. Terry McDonald, Tulsa; and Mr. Lew Meibergen, Enid, who also serves as Chairman of the combined Arkansas River Basin Interstate Committee.

The committee is encouraged about water resource developmental opportunities in the Arkansas River Basin for not only navigation, but also hydropower, flood control, recreation, water supply, and environmental stewardship. However, we are concerned that existing and proposed funding levels will not support the needs.

Mr. Chairman, Public Law 108-137 authorized a 12-foot channel on the McClellan-Kerr Arkansas River Navigation System. The Corps is now obligated to operate and maintain the system as a 12-foot channel. Over 90 percent of the system currently is adequate for a 12-foot channel. Deepening the remainder of the channel to 12 feet will allow carriers to place 43 percent more cargo on barges, which will reduce the amount of fuel consumed and emissions released. Funds in the amount of \$7.0 million were allocated in fiscal year 2005 with \$1.5 million used to complete the Feasibility Study and Environmental Impact Statement with the other \$5.5 million used on engineering, design, and construction activities. In conjunction with the deepening project the Corps is preparing a Basin Wide Master Plan that will include an integrated major maintenance construction and operational maintenance prioritized list for investment opportunities. Other environmental benefits include the creation of new aquatic habitat through new dike construction and the construction of Least Tern islands through beneficial use of dredged material.

Therefore, we request \$40 million to maintain the authorized depth by constructing dike structures to minimize dredging and dredging only necessary areas. This investment will increase the cost competitiveness of this low-cost, environment-friendly transportation method and help us combat the loss of industry and jobs to overseas.

Tow Haulage Equipment—Oklahoma.—We request funding of \$5.0 million to initiate the installation of tow haulage equipment on the locks located along the Arkansas River portion of the McClellan-Kerr Arkansas River Navigation System.

The Power Plant at Webbers Falls Lock and Dam on the Arkansas River has suffered from greatly reduced reliability due to turbine design problems. One of the three turbines at the project has suffered major damage and will remain unavailable for generation until it can be rebuilt. Because this is a run-of-the-river facility with no storage, energy spilled due to off-line units is energy that is lost forever. A feasibility study recommending major rehabilitation of this unit has been approved by the office of the Chief of Engineers.

Similar problems have been experienced at Ozark-Jeta Taylor Lock and Dam on the Arkansas River in Arkansas. Congress approved a new start and funding to begin the major rehabilitation of the Ozark powerhouse in fiscal year 2003. Congress approved the administration's fiscal year 2005 budget request of \$5 million in

Construction General funding to continue this major rehabilitation. By combining the turbine replacements into a single contract, the Little Rock District awarded a contract in May 2005 to replace the turbines with a more reliable design. This contract also includes three options to provide newly designed turbines for the Webbers Falls project as well, if additional funding is forthcoming as recommended by the Corps' Hydropower Design Center. The Corps has saved \$5 million over the life of the project. Unfortunately, no funding for these projects was included in the administration's fiscal year 2006 and 2007 budget requests, and the conference report on the fiscal year 2006 Energy and Water Development Appropriations bill also excluded funding for them.

The wholesale power customers are providing essential funding for the turbine replacement contract in fiscal year 2006 under terms of a Memorandum of Agreement (MOA) between the Corps, the customers and Southwestern Power Administration. However, the MOA is not a viable vehicle for long-term funding of the contract.

The committee recommends that Congress appropriate \$19.5 million to start the Webbers Falls major rehab in early in fiscal year 2007.

Arkansas-White Rivers Cutoff Study is to determine a solution to prevent the developing cutoff from joining the Arkansas and White Rivers near the confluence of the McClellan-Kerr Arkansas River Navigation System and the Mississippi Rivers. If not corrected, this occurrence could have a dramatic adverse effect on the navigation system. Unless corrected, this will effectively drain the water from the navigation system and halt the movement of commerce on the system.

Therefore we request an appropriation of \$300,000 to protect the navigation system from closure.

There has been over \$5.5 billion invested in the construction and development of the McClellan-Kerr Arkansas River Navigation System by the Federal Government (\$1.3 billion) and the public and private sector (\$4.2 billion +), resulting in the creation of over 50,000 jobs in this partnered project.

Maintenance of the Navigation System.—In preparation for the deepening of the navigation system from 9 feet to 12 feet, there is a backlog of maintenance items that has been deferred due to insufficient budgets to allow proper maintenance. These maintenance items are required even to support navigation at the 9 foot depth in order to not jeopardize the reliability of the system. Therefore, we request additional funding in the amount of \$1,549,000—plus the amount from Little Rock, over and above normal funding, for deferred channel maintenance. These funds would be used for such things as repair of bank stabilization work, needed advance maintenance dredging, and other repairs needed on the system's components that have deteriorated over the past 3 decades.

In addition to the system-wide needed maintenance items mentioned above, the budget for the Corps of Engineers for the past several years has been insufficient to allow proper maintenance of the McClellan-Kerr Arkansas River Navigation System-Oklahoma portion. As a result, the backlog of maintenance items has continued to increase. If these important maintenance issues are not addressed soon, the reliability of the system will be jeopardized. The portion of the system in Oklahoma alone is responsible for returning \$2.6 billion in annual benefits to the regional economy. The fiscal year 2006 O&M President's budget for Tulsa District was \$8.2 million less (over 11 percent) than the fiscal year 2005 appropriation, which will result in no funding being available for critical infrastructure maintenance in fiscal year 2006. The fiscal year 2007 O&M President's budget is currently proposed at \$72.4 million which is presently \$10 million more than the fiscal year 2006 budget. This \$10 million increase is offset by higher energy, labor, and construction costs. We therefore request that \$2.1 million be added to the budget to accomplish critical infrastructure maintenance items on the Oklahoma portion of the system as follows:

—*McClellan-Kerr.*—\$600,000 to repair plate seals for the weirs;

—*Robert S. Kerr.*—\$1,500,000 to repair erosion and construct emergency mooring wood dolphins.

Additional O&M funds are also requested for other high priority, non-navigation, water resource needs including \$600,000 for tainter gate repair at Kaw Lake; \$1,200,000 to repair sluice gates and liners at Keystone Lake; \$1,500,000 for tainter gate repair at Fort Gibson Lake; and \$400,000 for tainter gate hoist equipment replacement at Tenkiller Ferry Lake.

Miami, Oklahoma and Vicinity Feasibility Study.—We request funding of \$350,000 to move into the feasibility stage for the vicinity in Ottawa County including and surrounding Miami, Oklahoma in the Grand (Neosho) Basin. Water resource planning-related concerns include chronic flooding, ecosystem impairment, poor water quality, subsidence, chat piles, mine shafts, health effects, and Native American issues. The State of Oklahoma's desire is to address the watershed issues in a holistic fashion and restore the watershed to acceptable levels. Study alter-

natives could include structural and non-structural flood damage measures, creation of riverine corridors for habitat and flood storage, development of wetlands to improve aquatic habitat and other measures to enhance the quality and availability of habitat and reduce flood damages.

Oologah Lake Watershed Feasibility Study.—We request funding of \$500,000, which is \$500,000 more than the President's budget request, for ongoing feasibility studies at Oologah Lake and in the upstream watershed. The lake is an important water supply source for the city of Tulsa and protection of the lake and maintaining and enhancing the quality of the water is important for the economic development of the city. Recent concerns have been expressed by the City of Tulsa and others regarding potential water quality issues that impact water users, as well as important aquatic and terrestrial habitat. Concerns are related to sediment loading and turbidity, oilfield-related contaminants and nutrient loading.

Grand (Neosho) Basin Reconnaissance Study.—We request funding in the amount of \$450,000 to conduct a feasibility study of the water resource problems in the Grand (Neosho) Basin in Oklahoma and Kansas. There is a need for a basin-wide water resource planning effort in the Grand-Neosho River basin, apart from the issues associated with Grand Lake, Oklahoma. The reconnaissance report has been approved and indicated that there is a Federal interest in this project and the feasibility will focus on the evaluation of institutional measures which could assist communities, landowners, and other interests in northeastern Oklahoma and southeastern Kansas in the development of non-structural measures to reduce flood damages in the basin. Feasibility Cost Share Agreements will be executed in 2006 but the fiscal year 2007 President's budget did not provide funding to continue into the feasibility stage.

Spavinaw Creek Watershed Study.—Spavinaw Creek and its downstream impoundments, Eucha and Spavinaw Lakes, are severely impacted by nutrient loading and excessive algae growth as a result of agricultural practices located in Arkansas and Oklahoma. Degradation of water quality has led to taste and odor problems, increased treatment costs, and a decreased recreational and aesthetic value of the lakes. Together, Spavinaw and Eucha Lakes provide 47 percent of the water supply for the Tulsa metropolitan area. The Metropolitan Utility Authority entered into the feasibility cost-share agreement in June 2004. We request funds in the amount of \$210,000 to continue this study.

Grand Lake Feasibility Study.—A need exists to evaluate solutions to upstream flooding problems associated with the adequacy of existing real estate easements necessary for flood control operations of Grand Lake, Oklahoma. A feasibility study is necessary to determine the most cost-effective comprehensive solution to the real estate inadequacies. We urge you to provide \$500,000 to fund feasibility studies for this important project in fiscal year 2007 and to direct the Corps of Engineers to execute the study at full Federal expense. This project has been a Congressional add for the past 4 years, but there are no funds in the fiscal year 2007 President's budget request to continue this project.

Section 205.—Although the Small Flood Control Projects Program addresses flood problems which generally impact smaller communities and rural areas and would appear to benefit only those communities, the impact of those projects on economic development crosses county, regional and sometimes State boundaries. There is limited funding available for these projects and we urge this program be increased to an annual limit of \$65 million.

We also request your support of the Planning Assistance to States Program (Section 22 of the 1974 Water Resources Development Act) which authorizes the Corps of Engineers to use its technical expertise in water and related land resource management to help States and Indian tribes solve their water resource problems. The Water Resources Development Act of 1996 increased the annual program limit from \$6 million to \$10 million and we urge this program be fully funded to the programmatic limit of \$10 million. We urge that you support the State of Oklahoma in requesting their full allocation of \$500,000 for the Planning Assistance to States program for several important projects awaiting execution including the cities of Tulsa, Bristow, and Bartlesville and for State Water Planning efforts.

In addition, we request your support of the Section 107 Navigation Program and ask that you provide \$100,000 for the initiation of studies for a port in Wagoner County, Oklahoma. A Wagoner County Port could greatly benefit the region and utilize the authorized deepening of the McClellan-Kerr Arkansas River Navigation system to benefit the Nation.

We strongly urge the Appropriations Committee to raise the Corps of Engineers' budget to \$6.7 billion to help get delayed construction projects back on schedule and to reduce the deferred maintenance backlog which is out of control. This will help

the Corps of Engineers meet the obligations of the Federal Government to people of this great country.

Mr. Chairman, we appreciate this opportunity to present our view on these subjects.

PREPARED STATEMENT OF THE CITY OF FLAGSTAFF, ARIZONA

Chairman Domenici, Ranking Member Reid, and distinguished members of the subcommittee, thank you for allowing me to testify on behalf of the City of Flagstaff, Arizona in support of \$22.6 million in the Army Corps of Engineers budget for the Rio de Flag flood control project in fiscal year 2007. I believe this project is critically important to the city, to northern Arizona, and, ultimately, to the Nation.

As you may know, Mr. Chairman, with this subcommittee's help over the last 2 fiscal years, Rio de Flag received nearly \$10 million to continue construction on this important project. We are extremely grateful that the subcommittee boosted this project well above the president's request both years, and we would appreciate your continued support for this project in fiscal year 2007.

Like many other projects under the Army Corps' jurisdiction, Rio de Flag received no funding in the president's fiscal year 2007 budget, although the Corps has expressed \$22.6 million as optimal funding to continue construction on the project. We are hopeful that the subcommittee will fund the Rio de Flag project at \$22.6 million when drafting its bill in order to keep the project on an optimal schedule.

Flooding along the Rio de Flag dates back as far as 1888. The Army Corps has identified a Federal interest in solving this long-standing flooding problem through the Rio de Flag, Flagstaff, Arizona Feasibility Report and Environmental Impact Study (EIS). The recommended plan contained in this feasibility report was developed based on the following opportunities: (1) flood control and flood damage reduction; (2) environmental mitigation and enhancement; (3) water resource management; (4) public recreation; and (5) redevelopment opportunities. This plan will result in benefits to not only the local community, but to the region and the Nation.

The feasibility study by the Corps of Engineers has revealed that a 500-year flood could cause serious economic hardship to the city. In fact, a devastating 500-year flood could damage or destroy approximately 1,500 structures valued at more than \$400 million. Similarly, a 100-year flood would cause an estimated \$100 million in damages. In the event of a catastrophic flood, over half of Flagstaff's population of more than 60,000 would be directly impacted or affected.

In addition, a wide range of residential, commercial, downtown business and tourism, and industrial properties are at risk. Damages could also occur to numerous historic structures and historic Route 66. The Burlington Northern & Santa Fe Railway (BNSF), one of the primary east-west corridors for rail freight, could be destroyed, as well as U.S. Interstate 40, one of the country's most important east-west interstate links. Additionally, a significant portion of Northern Arizona University (NAU) could incur catastrophic physical damages, disruptions, and closings. Public infrastructure (e.g., streets, bridges, water, and sewer facilities), and franchised utilities (e.g., power and telecommunications) could be affected or destroyed. Transportation disruptions could make large areas of the city inaccessible for days.

Mr. Chairman, the intense wildfires that have devastated the West during the last several years have only exacerbated the flood potential and hazard in Flagstaff. An intense wildfire near Flagstaff could strip the soil of ground cover and vegetation, which could, in turn, increase runoff and pose an even greater threat of a catastrophic flood.

In short, a large flood could cripple Flagstaff for years. This is why the city believes it is so important to ensure that this project remains on schedule and that the Corps is able to maximize its optimal funding of \$22.6 million in fiscal year 2007 for construction of this flood control project.

In the city's discussions with the Corps, both the central office in Washington and its Los Angeles District Office also believe that the Rio de Flag project is of the utmost importance and both offices believe the project should be placed high on the subcommittee's priority list. We are hopeful that the subcommittee will consider this advice and also place the project high on its priority list and fully fund the project at \$22.6 million for fiscal year 2007.

As you may know, project construction and implementation of Rio de Flag was authorized in the Water Resources Development Act (WRDA) of 2000. The total project cost is estimated to be \$54,100,000 in and above the reconnaissance study or the feasibility study. The Non-Federal share is currently \$24,000,000 and the Federal share is currently \$30,000,000. Final project costs must be adjusted based on Value Engineering and final design features. It is important to note the City of

Flagstaff has already committed more than \$10,500,000 to this project, and an additional \$2,000,000 in excess of its cost share agreement. This clearly demonstrates the city's commitment to completing this important project. Through this investment in the project, the city has entered into the Project Cooperation Agreement (PCA) with the Department of the Army.

The City of Flagstaff, as the non-Federal sponsor, is responsible for all costs related to required Lands, Easements, Rights-of-Way, Relocations, and Disposals (LERRD's). The city has already secured the necessary property rights to begin construction in 2004. Implementation of the city's Downtown and Southside Redevelopment Initiatives (\$100,000,000 in private funds) are entirely dependent on the success of the Rio de Flag project. The Rio de Flag project will also provide a critical missing bike/pedestrian connection under Route 66 and the BNSF Railroad to replace the existing hazardous at grade crossings.

Both design and construction are divided into two phases. Phase I construction commenced in 2004. Phase II of the project commenced last year.

Mr. Chairman, the Rio de Flag project is exactly the kind of project that was envisioned when the Corps was created because it will avert catastrophic floods, it will save lives and property, and it will promote economic growth. In short, this project is a win-win for the Federal Government, the city, and the surrounding communities.

Furthermore, the amount of money invested in this project by the Federal Government—approximately \$30 million—will be saved exponentially in costs to the Federal Government in the case of a large and catastrophic flood, which could be more than \$395 million. It will also promote economic growth and redevelopment along areas that are currently underserved because of the flood potential.

In conclusion, the Rio de Flag project should be considered a high priority for this subcommittee, and I encourage you to support full funding of \$22.6 million for this project in the fiscal year 2007 Energy and Water Development Appropriations bill. Thank you in advance for your consideration.

PREPARED STATEMENT OF THE TENNESSEE-TOMBIGBEE WATERWAY DEVELOPMENT
AUTHORITY

Mr. Chairman, we are pleased to once again submit to you for your consideration the Authority's requests for fiscal year 2007 appropriations for waterway projects of importance to our region, including the Tennessee-Tombigbee Waterway. This is the 47th consecutive year that the waterway compact has presented its funding requests to the Congress.

The Tennessee-Tombigbee Waterway Development Authority is a federally authorized interstate compact. Its member States are Alabama, Kentucky, Mississippi, and Tennessee. Governor Haley Barbour of Mississippi is chairman of the development authority.

As we have reported to you in the past, the Authority is most concerned that ports and waterways as well as the rest of the Nation's aging infrastructure are woefully under-funded commensurate with needs. While this Nation continues to underinvest in its infrastructure, China will spend \$242 billion on rail service and intermodal connections with its seaports, alone, by 2020. China is projected to surpass the United States as the world's dominant economic power by 2050, largely supported by these kinds of improvements.

While it is encouraging that the proposed 2007 budget request for the Corps of Engineers is the largest in memory by an administration, it is still nearly \$600 million less than that approved by the Congress for this year. We are especially concerned that enough funds are not being provided to adequately operate and maintain our ports and waterways. Although the Tennessee-Tombigbee is a relatively new waterway compared to other systems, it has already accumulated a \$12 million backlog of indefinitely deferred maintenance and repairs due to under funding in prior years assuming the proposed budget is approved. The President's budget is nearly \$4 million less than that needed to adequately fund the Tenn-Tom as described below.

TENNESSEE-TOMBIGBEE WATERWAY

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
O&M	24.0	20.6	24.5
Wildlife Mitigation	2.0	1.5	2.0

Recognizing the budgetary constraints the Congress faces, we are recommending only level funding for the Tenn-Tom in 2007. If approved, the requested \$24.5 million will adequately maintain the waterway and allow it to generate its expected benefits. This level of funding will also decrease the O&M backlog by nearly \$4 million.

The \$3.9 million recommended increase above the President's budget would be used for dredging and to provide more upland disposal capacity to accommodate the increased dredging needs. Also, additional funds will help eradicate a growing problem with aquatic weeds that have in the past been so prevalent to stop the operation of one of the waterway's locks. This is the No. 1 complaint from the public concerning the waterway.

The recommended \$2 million for the Wildlife Mitigation Project will also provide level funding for the reimbursement of expenses incurred by the States of Alabama and Mississippi to manage some 126,000 acres of Federal wildlife habitat that is part of the project.

The Tenn-Tom has now been in operation 21 years. There have not been any improvements made since its completion. The waterway has helped attract over \$6 billion of new and expanded industrial development to the waterway corridor. Nearly \$1 billion of new investments were announced in 2005, alone, that will generate about 1 million tons of additional commerce for the project. The Authority is requesting that \$5 million be appropriated to enable the Corps of Engineers to install cells near Columbus, MS, for mooring and fleeting of the growing number of barges operating on the waterway. The cells are also needed for mooring tows during high water when it is not safe to transit the Beville Lock and Dam located downstream. The Tenn-Tom is the only major waterway where the Corps has not built these kinds of facilities to provide safer and more efficient navigation.

KENTUCKY LOCK

[In millions of dollars]

	Fiscal Year 2006 Level	2007 Proposed Budget	Authority's 2007 Recommendation
Lock Construction	23.0	.....	55.0

Construction of a new lock at Kentucky Dam on the Tennessee River is our highest priority of all the waterway improvements now being undertaken by the Corps. The Tennessee-Cumberland system transports nearly 60 million tons of commerce each year with nearly 40 million tons traversing Kentucky Lock. The nearly 60-year-old existing lock cannot accommodate such a large volume of traffic and is one of the most inefficient bottlenecks on the entire waterway system. Delays to transit the lock extend as long as 7 hours, costing shippers as much as \$70 million in unnecessary transportation expense each year.

Although construction has been underway for 6 years and nearly \$200 million have been invested so far, the Office of Management and Budget has again instituted a budget policy not to fund any Corps project that has less than a 3-to-1 remaining benefits-to-remaining-cost ratio. The Congress resoundingly rejected that arbitrary standard last year and we strongly recommend it do the same for 2007. The project has a 2.7-to-1 B/C ratio, well above the 1-to-1 ratio the Congress has traditionally adopted to determine a project's eligibility for Federal funding.

Fifty-five million dollars is requested to continue construction of this important project on a reasonable and efficient schedule.

CHICKAMAUGA LOCK

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
Lock Construction	10.0	27.0	27.0
Lock Repairs	2.4	1.25	1.25

We support the President's budget for this important project and recommend those funds shown above be approved. Twenty-seven million dollars will permit the Corps to make reasonable progress in constructing a new lock to replace the 60-year-old lock that is too small to serve existing commercial traffic. It also has some serious structural problems. These funds are critical to help preclude a potentially serious safety problem with the old lock.

TENNESSEE RIVER

[In millions of dollars]

	Fiscal Year 2006 Level	Proposed 2007 Budget	Authority's 2007 Recommendation
O&M	18.5	19.3	22.5

We recommend that \$22.5 million be appropriated for the operation and maintenance of the Tennessee River, one of the busiest waterways in the Nation. Like most of the Nation's waterways, many of the locks and dams on the Tennessee have outlived their 50-year economic life and need extensive repairs to prolong the project's physical life. This aggressive maintenance requires increased funding.

In closing, we are very concerned about a new budget policy adopted by the Corps and the administration to aggregate O&M funds by region instead by individual projects as typically presented in the appropriations bills. As a non-Federal sponsor of one of the Corps' largest projects, it would be difficult, if not impossible, to fulfill our responsibilities for ensuring the waterway is adequately funded each year. Your committee, the project's congressional supporters and the Authority would have no assurance of its level of funding, either being proposed by the administration or what is finally allocated after enactment of the appropriations bill. The current procedure has always worked for the benefit of all parties, so why fix something that is not broken?

Mr. Chairman, we greatly appreciate the leadership and support you have given to developing the Nation's water resources. We especially thank you for your continued support of the Tenn-Tom Waterway and its funding needs. We respectfully ask for your careful consideration and approval of the above requests for the Tenn-Tom Waterway and other projects of such great importance to our region.

PREPARED STATEMENT OF THE UPPER MISSISSIPPI RIVER BASIN ASSOCIATION
(UMRBA)

[In millions of dollars]

	President's Request	UMRBA Recommendation
Construction General:		
Upper Miss. River Restoration Program (aka EMP)	26.8	33.52
Lock and Dam 3 (Major Rehabilitation) ¹		4.30
Lock and Dam 11 (Major Rehabilitation) ¹	20.32	27.75
Lock and Dam 19 (Major Rehabilitation) ¹	5.44	5.60
Lock and Dam 24 (Major Rehabilitation) ¹	3.90	3.90
Locks 27 (Major Rehabilitation) ¹	3.40	5.20
Upper Mississippi and Illinois Rivers Navigation and Ecosystem Sustainability Program (if construction is authorized)		16.20
Operation and Maintenance:		
O&M of the Upper Mississippi and Illinois Rivers Navigation System ²	174.36	263.44

[In millions of dollars]

	President's Request	UMRBA Recommendation
General Investigations:		
Upper Mississippi and Illinois Rivers Navigation and Ecosystem Sustainability Program (PED)	24.00

¹Funding for major rehabilitation projects would be shifted to the O&M account under the President's budget proposal. Major rehabilitation would still be cost-shared 50 percent from the Inland Waterways Trust Fund.

²The administration has modified the structure of the O&M account in its fiscal year 2007 budget. Rather than budgeting for individual projects, the O&M request is organized by region and by business line within region. The UMRBA is addressing its testimony to that portion of the Region 7 navigation business line that is attributable to O&M of the Upper Mississippi and Illinois Rivers navigation system. Thus, we have disaggregated numbers from the President's budget.

The Upper Mississippi River Basin Association (UMRBA) is the organization created in 1981 by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to serve as a forum for coordinating river-related State programs and policies and for collaborating with Federal agencies on regional issues. As such, the UMRBA works closely with the Corps of Engineers on a variety of programs. Of particular interest to the basin States are the following:

CORPS CONTRACTING PRACTICES

In its fiscal year 2006 energy and water appropriations measure, Congress included language generally barring the Corps from using continuing contracts. While the States understand Congress' need to retain appropriate control and oversight, this new provision, in combination with restrictions on reprogramming, significantly reduces the Corps' flexibility and efficiency in implementing ongoing programs, such as operation and maintenance, the River Restoration Program, and the proposed Navigation and Ecosystem Sustainability Program. By breaking work into smaller contracts, the Corps' planning and administration costs increase, as do costs associated with repeated mobilization/demobilization, purchasing in smaller quantities, etc. The impacts of these increased costs in this very tight fiscal environment are particularly deleterious. The UMRBA encourages Congress to develop an approach to Corps contracting that ensures appropriate controls and accountability while also permitting the Corps to execute its work efficiently and effectively.

UPPER MISSISSIPPI AND ILLINOIS RIVERS NAVIGATION STUDY

It has been more than a year since the Corps completed its 14-year Upper Mississippi and Illinois Rivers Navigation Study, issuing the final feasibility report in September 2004 and the Chief's Report in December 2004. While Congress has not yet authorized the recommended integrated plan for navigation improvements and ecosystem restoration, it has provided preconstruction engineering and design (PED) funding to ensure that the necessary planning and design work can proceed, in anticipation of construction authorization. Congress appropriated \$13.5 million for PED in fiscal year 2005 and \$10.0 million in fiscal year 2006. A similar bridging strategy will be necessary in fiscal year 2007 if authorization is still pending.

PED.—The UMRBA supports \$24 million for PED in fiscal year 2007, despite the fact that the administration has once again not included PED in its budget request. Many of the large scale projects, such as new locks or fish passage at dams, require 3 years or more of PED before they can move to construction. It is thus critical that PED work continue without pause and be sustained over time. In fiscal year 2005 and 2006, PED funding has been directed to both navigation improvements and ecosystem restoration projects. Continuing this dual purpose approach in fiscal year 2007 would require that \$16.1 million be directed to navigation measures (including mooring facilities, economic modeling and evaluations, switchboats, and lock design at 3 sites), \$5.9 million to ecosystem restoration plan formulation and evaluation, and \$2.0 million for program management.

Construction.—If the integrated navigation and ecosystem restoration program is authorized for construction this year, construction could be initiated on some projects in fiscal year 2007. In that event, UMRBA would recommend construction funding of \$16.2 million. This funding would support mooring facilities at 7 sites, switchboats at 2 sites, and 8 ecosystem restoration projects.

UPPER MISSISSIPPI RIVER RESTORATION PROGRAM (AKA EMP)

For the past 19 years, the Upper Mississippi River Restoration Program, commonly known as the Environmental Management Program (EMP), has been the premier program for restoring the river's habitat and monitoring the river's ecological health. As such, the EMP is key to achieving Congress' vision of the Upper Mis-

Mississippi as a “nationally significant ecosystem and a nationally significant commercial navigation system.” Congress reaffirmed its support for this program in the 1999 Water Resources Development Act by reauthorizing the EMP as a continuing authority and increasing the annual authorized appropriation to \$33.5 million. As the EMP embarks upon its 20th anniversary year, the UMRBA is pleased that the administration has identified the EMP as one of “six construction projects considered to be national priorities.” Even with this emphasis, however, the administration has requested only \$26.8 million for the EMP in fiscal year 2007. This would continue the trend of the past 9 years, in which the annual EMP appropriation has fallen short of the authorized funding level. The UMRBA strongly urges Congress to appropriate full funding of \$33.52 million for the EMP in fiscal year 2007.

The administration’s proposed \$26.8 million budget would support planning and design work on eight habitat restoration projects and construction work on an additional 13 projects. In addition, the fiscal year 2006 request would support modest expansion of targeted research and data management efforts under the Long Term Resource Monitoring Program (LTRMP), which has suffered substantially from the funding shortfalls in recent years. However, to realize its full promise, the EMP requires funding at the full authorized amount of \$33.52 million. This would support design work on three additional projects and construction on one additional project. It would also permit accelerated work on several other projects, thereby increasing overall program efficiency. Finally, funding at the full capability level would support LTRMP research on adaptive management, fish and water quality data analysis, and key modeling efforts. Therefore, the UMRBA urges Congress to fund the EMP at its full authorized amount of \$33.52 million.

UMRBA is particularly concerned about an apparent directive from OMB that \$3 million of fiscal year 2007 EMP funding be devoted to development of a “10-year aquatic ecosystem restoration plan.” Such a plan is unnecessary and would duplicate plans that the Corps just completed as part of the Navigation Study. Given the backlog of EMP habitat restoration projects awaiting construction, and the vast number of unmet needs under the LTRMP, it would be misguided to divert construction funds from this important work to develop a plan that is largely duplicative. Congress should direct the Corps to use EMP funds exclusively for construction of habitat restoration projects and long term monitoring, as authorized in the 1999 Water Resources Development Act.

UMRBA recognizes that one of the biggest challenges facing future restoration efforts on the Upper Mississippi River (UMR) will be integrating the work that is currently done under EMP with the new ecosystem/navigation authority being proposed. Congress is currently considering authorization of a new dual-purpose authority for the Corps, as recommended in the navigation feasibility study. For now, however, the EMP remains the single most effective and long-standing UMR ecosystem restoration program. Moreover, the EMP’s monitoring element is entirely unique and would not be replicated in the proposed new authority. Therefore, fully funding the EMP is as important today as it has ever been. The EMP must not languish as questions related to future program streamlining and coordination are being addressed.

MAJOR REHABILITATION OF LOCKS AND DAMS (L&D)

Most of the locks and dams on the Upper Mississippi River System are over 60 years old and many are in serious need of repair and rehabilitation. For the past 20 years, the Corps has been undertaking major rehabilitation of individual facilities throughout the navigation system in an effort to extend their useful life. This work is critical to ensuring navigation reliability and safety.

The UMRBA supports the President’s fiscal year 2007 budget request for major rehabilitation work at L&D 24 (\$3.9 million) and supports increasing the President’s request for rehabilitation work at L&D 11 (\$27.75 million), L&D 19 (\$5.6 million), and Locks 27 (\$5.2 million). L&D 11, located near Dubuque, Iowa, is nearly 70 years old. The major rehabilitation project currently underway includes new bulkheads, extensive miter gate rehabilitation, lock chamber and guidewall repairs, and electrical system upgrades. The increase of \$7.4 million above the President’s request for L&D 11 is needed to fully fund the Stage II contract. Rehabilitation needs are especially urgent at L&D 19, where temporary use of the only available spare lock gates risks closure of the river north of Keokuk, Iowa, if those gates fail. The increase of \$156,000 above the President’s request for L&D 19, combined with anticipated fiscal year 2006 carryover, is required to fully fund the Stage I upper gate major rehabilitation. L&D 24, located near Clarksville, Missouri, is more than three-fourths through its \$87 million rehabilitation. Fiscal year 2007 funding will support work on dam tainter gate anchorages, dam bulkheads, and a bulkhead pickup beam.

Lock 27 is located at a critical juncture on the inland waterways system, downstream of the Illinois and Missouri Rivers on the Chain of Rocks Canal in the St. Louis area. Major rehabilitation needs on this more than 50-year-old structure are extensive, including replacement of lock gates, lift gate machinery, and culvert valves. Fiscal year 2007 would mark the first year of major rehabilitation at the structure. The increase of \$1.8 million above the President's request would fund a range of design and construction work on lock lighting, culvert valves, sill anchors, and lock wall tie downs.

The UMRBA also supports funding for a major rehabilitation project that is not included in the President's request: L&D 3 at \$4.3 million. Navigation safety and embankment failure have been a concern for over 20 years at L&D 3, and river pilots agree that this is the most dangerous stretch of the Upper Mississippi to navigate. Should there be an accident, the adjacent embankments, which have been severely weakened by age and past accidents, could be breached. In this event, commercial navigation would be curtailed and two large power plants would be forced to shut down. The \$4.3 million in funding would be used to complete planning and fully fund the first phase of construction.

OPERATION AND MAINTENANCE (O&M) OF THE UPPER MISSISSIPPI RIVER NAVIGATION SYSTEM

The Corps is responsible for operating and maintaining the Upper Mississippi River System for navigation. This includes channel maintenance dredging, placement and repair of channel training structures, water level regulation, and routine care and operation of 29 locks and dams on the Mississippi River and 7 locks and dams on the Illinois River. The fiscal year 2007 budget request totals approximately \$174.36 million for O&M of this river system. These funds are critical to the Corps' ability to maintain a safe and reliable commercial navigation system, while protecting and enhancing the river's environmental values.

Unfortunately, the President's fiscal year 2007 budget represents a further widening of the gap between the amount requested and the amount required for adequate operation and maintenance of the navigation system. In fiscal year 2006, the gap between the President's request and the Corps' capability was \$52.14 million. In fiscal year 2007, this shortfall has increased to \$89.08 million. For segments of the Upper Mississippi System, this would mean multiple years during which resources have not supported even baseline operation and maintenance, resulting in an increasing backlog and a growing risk of failures and service interruptions. The impacts of these funding shortfalls will be amplified if Congress extends its fiscal year 2006 prohibition on continuing contracts. Responses to these continued fiscal pressures may include reductions in lock operating hours and cancellations of ongoing contracts. Funding beyond the President's request is needed to restore basic service levels, coordinate major maintenance with major rehabilitation at L&D 11 and 19, and purchase stop logs to ensure the Corps' ability to dewater lock chambers for emergency repairs.

The UMRBA supports increased funding for O&M of the Upper Mississippi and Illinois River System to meet routine operation and maintenance needs, and to address the growing unfunded maintenance backlog. The Upper Mississippi River System is simply too valuable to invite disaster through chronic underfunding of basic O&M. For fiscal year 2007, O&M funding totaling \$263.44 million is needed on the Upper Mississippi River System to address ongoing needs and critical backlog items.

PREPARED STATEMENT OF THE CITY OF SANTA BARBARA, CALIFORNIA

As your distinguished subcommittee writes the fiscal year 2007 Energy and Water Resources Appropriations Bill, I would like to bring a very important Corps of Engineers' project to your attention. The City of Santa Barbara requests \$2,020,000 from the Army Corps of Engineers' (ACOE) Operation and Maintenance (O&M) Account in fiscal year 2007 Energy and Water Development Appropriations Bill for essential annual maintenance dredging of Santa Barbara Harbor's Federal Navigational Channel.

PROJECT JUSTIFICATION

In 1970 Congress authorized (Public Law 91-611, Sec. 114) full funding for ACOE maintenance dredging for the Harbor's Federal Channel to reduce storm damage, shoaling and navigational hazards. Today more than ever, the Harbor continues to serve and support our National interests. The Harbor is home port for the 87 foot U.S. Coast Guard Cutter Blackfin and NOAA R/V Shearwater serving Channel Is-

lands National Marine Sanctuary (CINMS). Blackfin's Harbor location is crucial to its mission of patrolling waters all the way to Morro Bay (100 miles north) and is critical to ocean safety and rescue, together with emerging Homeland Security Defense System (USCG) requirements along the California coastline. Santa Barbara Harbor also provides a staging area, facilities and resources required for oil spill prevention and response, and is a designated harbor of safe refuge.

Every winter, approximately 400,000 cubic yards of sand piles up at Santa Barbara Harbor. Santa Barbara Harbor impedes the transport of sand downcoast resulting in shoaling of the Federal Channel and potential coastal erosion at several coastal communities. The Corps of Engineers conducted comprehensive studies of the Harbor in the 1950's and determined that annual dredging of the Harbor was necessary to maintain navigability and nourish downcoast beaches preventing erosion. It is essential to dredge at a minimum 250,000 cubic meters (c.m.) of sand from the Federal Channel every year to maintain year round navigability into and out of the Harbor.

A recap of the last several years demonstrates the continuing trend of reduced dredge funding, which could impact Harbor operations and eventually accumulated sand could close the channel during winter storms.

—*Fiscal Year 2005.*—Harbor inadvertently left out of President's Budget Submittal (approximately \$1.8 million was eventually restored and reprogrammed).

—*Fiscal Year 2006.*—President's Budget Submittal included \$1.408 million (Congressional actions reduced dredge funding to \$1.267 million).

—*Fiscal Year 2007.*—President's Budget Submittal includes \$1.2 million (Corps of Engineers indicates funding obligations of approximately \$2 million).

On average, the Harbor has received approximately \$1.8 million annually to undertake and complete maintenance dredging of the Harbor Federal Navigational Channel.

FUNDING REQUEST

The President's fiscal year 2007 budget recommendation includes \$1,200,000 for operations and maintenance dredging for Santa Barbara Harbor. I respectfully request that the U.S. House of Representatives, through your subcommittee, increase that level of funding to \$2,020,000 for fiscal year 2007 Corps of Engineers' Maintenance and Operation Account for dredging of the Harbor.

Thank you for the opportunity to submit this statement.

PREPARED STATEMENT OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

FISCAL YEAR 2007 WATER RESOURCES DEVELOPMENT APPROPRIATIONS

PROJECT	REQUEST
MURRIETA CREEK FLOOD CONTROL PROJECT: Construction General	\$11,500,000
HEACOCK AND CACTUS CHANNELS: Section 205—Design and Construction	6,200,000
NORCO BLUFFS BANK STABILIZATION PROJECT: Construction General	1,000,000
SAN JACINTO & UPPER SANTA MARGARITA RIVER WATERSHEDS SPECIAL AREA MANAGEMENT PLAN (SAMP):	
General Investigations	532,000
SANTA ANA RIVER—MAINSTEM: Construction General	71,300,000

MURRIETA CREEK FLOOD CONTROL, ENVIRONMENTAL RESTORATION AND RECREATION PROJECT

Murrieta Creek poses a severe flood threat to the cities of Murrieta and Temecula. Over \$12 million in damages was experienced in the two cities as a result of Murrieta Creek flooding in 1993. The 1997 Energy and Water Appropriations Act dedicated \$100,000 to conduct a Reconnaissance Study of watershed management in the Santa Margarita Watershed "including flood control, environmental restoration, stormwater retention, water conservation and supply, and related purposes". The study effort was initiated in April 1997 and completed the following December. The Reconnaissance Study identified a Federal interest in flood control on the Murrieta sub-basin, and recommended moving forward with a detailed Feasibility Study. This was completed in September 2000 and recommended the implementation of Alternative 6, the Locally Preferred Plan (LPP) for flood control, environmental restoration and recreation. The LPP was endorsed by the Cities of Temecula and Murrieta and by the community as a whole. H.R. 5483, the Energy and Water

Appropriations Act of 2000, included specific language authorizing the Corps to construct "the locally preferred plan for flood control, environmental restoration and recreation described as Alternative 6, based on the Murrieta Creek Feasibility Report and Environmental Impact Statement dated September 2000".

The Murrieta Creek Flood Control, Environmental Restoration and Recreation Project is being designed and will be constructed in four distinct phases. Phases 1 and 2 include channel improvements through the city of Temecula. Phase 3 involves the construction of a 250-acre detention basin, including a 160-acre environmental restoration site and over 50 acres of recreational facilities. Phase 4 of the project will include channel improvements through the city of Murrieta. Equestrian, bicycle and hiking trails as well as a continuous vegetated habitat corridor for wildlife are components of the entire 7-mile-long project.

The Omnibus Appropriations Bill for fiscal year 2003 provided \$1 million for a new construction start for this critical public safety project. Construction activities on Phase 1 of the project commenced in the Fall of 2003. The appropriations for fiscal year 2004 and additional funds allocated through re-programming allowed the Corps to continue construction on Phase 1, which was completed in December 2004. Phase 2 traverses Old Town Temecula, one of the hardest hit areas during the flooding of 1993. The Corps anticipates having a Phase 2 construction contract ready to award in the Winter of 2007. The District, therefore, respectfully requests the committee's support of an \$11.5 million appropriation in fiscal year 2007 to allow the Corps to complete the Design Documentation Report, complete plans and specifications on Phase 2, and initiate construction on Phase 2 of the long awaited Murrieta Creek Flood Control, Environmental Restoration and Recreation Project.

HEACOCK AND CACTUS CHANNELS PROTECTION OF MARCH AIR RESERVE BASE AND ADJACENT NEIGHBORHOODS

Heacock and Cactus Channels are undersized, earthen channels that border the eastern and northern boundary of the March Air Reserve Base. Substantial vegetation becomes established within both channels and impedes the conveyance of tributary storm flows to an existing outlet located downstream. Storm flows overtop the Cactus Channel and traverse the March Air Reserve Base causing major disruption of the Base's operation, including the fueling of airplanes and transport of troops and supplies. The inadequate size of the Heacock Channel also causes storm drains from adjacent neighborhoods within the city of Moreno Valley to back up, flooding local residential areas and impeding access to these areas by residents as well as emergency services. The record rainfall of 2004/2005 also caused extensive erosion along Heacock Avenue jeopardizing existing utilities within the road right of way and cutting off access to approximately 700 residences.

Under Section 205 of the Continuing Authorities Program (CAP), the Corps received \$100,000 in fiscal year 2005 and completed an Initial Appraisal Report which determined the feasibility of proceeding with a project to provide flood protection to this sensitive area. With the \$546,000 received in fiscal year 2006 the Corps completed a Project Management Plan, executed a Feasibility Cost Sharing Agreement and will complete the Detailed Project Report by Fall 2006. The Corps expects to initiate plans and specification during the Fall 2006 and be ready to award a contract for construction by Spring 2007, providing the needed funding is allocated during this fiscal year.

The District requests support from the committee for a fiscal year 2007 appropriation of \$6,200,000 under Section 205 to complete the design and specifications and begin construction of the critically needed project.

NORCO BLUFFS BANK STABILIZATION PROJECT

The Norco Bluffs Bank Stabilization project consists of a soil cement toe protection structure constructed to the 100-year flood level at the base of the bluff, and a stable earthen buttress fill constructed to the top of the bluff along the Santa Ana River, in the city of Norco. The bluff stabilization work extends easterly from the Interstate 15 bridge to near Center Avenue. The estimated total cost of the project was approximately \$14 million. The Corps received a total of \$7.2 million in construction funds in the fiscal year 1998, fiscal year 1999 and fiscal year 2000 Federal budgets for the project. Since the available Federal funding fell short of that necessary to construct the entire project at once, the Corps decided to break it into two phases. Phase 1, which was completed in May 2000, includes a soil cement toe protection structure along the entire length of the project, as well as construction of approximately 1,300 feet of buttress fill in the most critical reach of the bluffs between Valley View and Corona Avenues. The Phase 2 contract involved the construction of the balance of the buttress fill. Construction of most of Phase 2 was

completed in December 2003, with the exception of hydroseeding the slopes, which was deferred until the appropriate season to ensure successful establishment. Unfortunately, the record rainfall of the 2004/2005 season caused damages to the project that need to be repaired in order to complete the project and turn it over.

The District requests support from the committee for a fiscal year 2007 appropriation of \$1,000,000 to complete the repairs, hydroseed the slopes and turn the project over to the District.

SAN JACINTO & UPPER SANTA MARGARITA RIVER WATERSHEDS SPECIAL AREA
MANAGEMENT PLAN

The County of Riverside recognizes the interdependence between the region's future transportation, habitat, open space and land-use/housing needs. Increased developmental pressure in the region has challenged local, State, and Federal agencies to respond to this unprecedented growth. In 1999, work was initiated on Riverside County's Integrated Project (RCIP) to determine how to best address this growth. In 2003 the County adopted a new General Plan and Multi-Species Habitat Conservation Plan (MSHCP) to address regional conservation and development plans that protect entire communities of native plants and animals, while streamlining the process for compatible economic development in other areas.

The Corps began development of a Special Area Management Plan (SAMP) for both the San Jacinto and Upper Santa Margarita Watersheds in 2001. This comprehensive planning effort will be used to assist Federal, State and local agencies with their decision making and permitting authority to protect, restore and enhance aquatic resources, while accommodating various types of development activities. The final product of the SAMP will be the establishment of an abbreviated or expedited regulatory permitting process by the Corps under Section 404 of the Clean Water Act. This process will increase regulatory efficiency and promote predictability to the regulated public. The plan will also build on the protection of high value resource areas, as envisioned in the MSHCP.

The District requests support from the committee for a fiscal year 2007 appropriation of \$532,000 to complete the work on the Nation's largest SAMP for the San Jacinto and Upper Santa Margarita Watersheds.

SANTA ANA RIVER—MAINSTEM

The Water Resources Development Act of 1986 (Public Law 99-662) authorized the Santa Ana River—All River project that includes improvements and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside and San Bernardino Counties continue to support this critical project as stated in past resolutions to Congress.

For fiscal year 2007, an appropriation of \$71.3 million is necessary to provide funding for the following activities:

- \$23 million to initiate construction activities on several features within "Reach 9" of the Santa Ana River immediately downstream of Prado Dam. This segment of the Santa Ana River project is the last to receive flood protection improvements. The streambed existing today in a relatively natural state would receive only localized levee and slope revetment treatment to protect existing development along its southerly bank. The funding will also be used for landscape enhancement of the river banks.
- \$13.3 million to fund required mitigation, complete tunnel repairs and conduct a water quality study of the Seven Oaks Dam project.
- \$35 million to continue with the construction of improvements to Prado Dam's outlet works and embankment, and construction of dikes to protect the properties within the Prado Dam basin.

The District respectfully requests that the committee support an overall \$71,300,000 appropriation of Federal funding for fiscal year 2007 for the Santa Ana River Mainstem Project.

PREPARED STATEMENT OF THE BOARD OF LEVEE COMMISSIONERS FOR THE YAZOO-
MISSISSIPPI DELTA

On behalf of its citizens in 10 counties in the Mississippi Delta, the Yazoo-Mississippi Delta Levee Board joins with the other local flood control operations within the Mississippi Valley Flood Control Association, in requesting full U.S. Army Corps of Engineers capacity funding of \$510 million for the Mississippi River and Tributaries Project (MR&T).

The Corps of Engineers projects that its engineering, construction and maintenance capabilities in fiscal 2007 amount to \$510 million, but the administration's budget for this critical and highly cost-effective project for the Nation's heartland is only \$278 million. We urge Congress, as it has before, to fully fund this vitally needed flood control project which has performed at a benefit-to-cost-ratio of an astounding 24-to-1 over the course of its history.

In addition to its flood control benefits, the MR&T also provides almost \$1 billion in navigation savings on the Mississippi River each year. Conceived and designed as a multi-component system to convey floodwaters that pass through the lower Mississippi Valley to the Gulf of Mexico, its components drain 41 percent of the continental United States. It simply must be completed.

A line-item-by-line-item breakdown of the MR&T's proposed 2007 works and cost estimates, along with suggested administration funding and Corps capabilities is attached and follows. We urge Congress to inspect this detailed project analysis and are confident that, as the branch of government most directly responsible to the people, it will reach favorable funding decisions.

For our part in this very important process, we will focus our testimony on several aspects of one greater issue which we know to be of primary concern and importance to the citizens of our levee district.

The Upper Yazoo Project (UYP), for which my board is proud to serve as local sponsor, represents a perfect model for what a flood control project should be, anywhere in the country. It is a perfect example of how critically-needed work can progress smoothly and without controversy or public upheaval.

Designed to restore the Yazoo/Coldwater/Tallahatchie river system to its flow capacity and eliminate damaging interbasin transfer, the UYP has already provided flood protection to Greenwood, and upon its completion, would also protect the additional areas of Marks, Lambert, Moorhead, Mississippi Delta Community College, Tutwiler, Glendora, Sumner and Webb.

The project is two-thirds complete. It needs only adequate funding to bring long-needed relief to thousands of people and their properties. Yet the proposed Federal budget for this public policy initiative contains not a dime. Not a cent. Such is an enormous injustice.

We urge the Congress to fully fund in 2007 the Upper Yazoo Project at the Corps' capability of \$22.5 million. The facts make the best case for the Upper Yazoo Project.

The remaining stage—the final one-third—of the UYP is its most critical. The remaining channels to be cleared convey the waters from three-fourths of Mississippi's flood control reservoirs and 74 percent of all the water from the State's hill section. Those reservoirs have now exceeded their originally-projected lifespans and we cannot continue to expose them to needless stress, which they are almost annually, when existing stream capacities won't always allow timely release of their waters.

The very successful Mississippi Delta Headwater Project (formerly DEC) has been very helpful in attempting to control the waters which flow from the hills to the Delta. We ask that it be funded to the Corps capability of \$25 million, but again, the success of that project only makes sense within the context of the UYP.

It is also critically important to note that for the UYP to proceed, it must be fully funded in the 2007 budget. With the longstanding practice of continuing construction contracts for Corps of Engineers' projects now eliminated, this project has come to a standstill simply for lack of funds.

This badly-needed work has already been delayed from 8 to 10 months this year because its Corps line item has run out of money and under the new rules, it will continue to be delayed in 2007 as well, unless Congress fully funds it at the prescribed \$22.5 million level.

We implore the Congress not to make the same sort of mistake, the effects of which we have so tragically seen in the wake of Hurricane Katrina. Let not the question be asked: Why wasn't something done when they knew about the danger?

Because of the stealthy nature of flooding in the unique area that is the Mississippi Delta, dangerously high water levels can appear literally overnight. We know these waterways must be restored to their capacities. We know that lives and property are threatened in the absence of that. We know we need to do this and we know the only issue is money.

Should a mother, or God forbid her child, fall victim to the present dangers which are only amplified through procrastination, this year, then the all-too-easy anthem of "wait until next year," will ring very hollow indeed.

**MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED
BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES APPROPRIATIONS**

PROJECT AND STATE	PRESIDENT'S BUDGET	MVFA REQUEST
SURVEYS, CONTINUATION OF PLANNING AND ENGINEERING & ADVANCE ENGINEERING & DESIGN:		
Memphis Harbor, TN		
Germantown, TN		
Lower Steele Bayou		\$100,000
Homochitto River		100,000
Memphis Metro Storm Water Management, TN		152,000
Bayou Meto, AR		1,553,000
Southeast Arkansas		800,000
Coldwater Basin Below Arkabutla Lake, MS	\$300,000	495,000
Quiver River, MS		100,000
Spring Bayou, LA		500,000
Point Coupee to St. Mary Parish, LA		100,000
Atchafalaya Basin Floodway Land Study, LA	100,000	300,000
Alexandria, LA to the Gulf of Mexico	200,000	200,000
Morganza, LA to the Gulf of Mexico		4,000,000
Donaldsonville, LA to the Gulf of Mexico		75,000
Tensas River, LA		
Donaldsonville Port Development, LA		500,000
Collection & Study of Basic Data	400,000	735,000
SUBTOTALS—SURVEYS	1,000,000	4,157,000
ADVANCED ENGINEERING & DESIGN		5,553,000
TOTAL GENERAL INVESTIGATIONS	1,000,000	9,710,000
CONSTRUCTION:		
St. John's Bayou—New Madrid Floodway, MO	2,500,000	15,000,000
Eight Mile Creek, AR		
Helena & Vicinity, AR		
Grand Prairie Region, AR		33,000,000
Bayou Meto, AR		11,847,000
West Tennessee Tributaries		500,000
Nonconnah Creek, TN		500,000
Wolf River, Memphis, TN		1,500,000
Augusta to Clarendon Levee, Lower White River		500,000
St. Francis Basin, MO & AR		11,840,000
Yazoo Basin, MS		73,275,000
Atchafalaya Basin, LA	27,600,000	30,000,000
Atchafalaya Basin Floodway, LA	4,840,000	10,809,000
MS Delta Region, LA	3,212,000	3,933,000
Channel Improvements, IL, KY, MO, AR, TN, MS & LA	43,092,000	47,392,000
Mississippi River Levees, IL, KY, MO, AR, TN, MS & LA	40,756,000	118,800,000
SUBTOTAL—CONSTRUCTION	122,000,000	358,896,000
SUBTOTAL—MAINTENANCE	147,000,000	226,327,000
SUSPENSION FUND	8,000,000	
SUBTOTAL—MISSISSIPPI RIVER & TRIBUTARIES	278,000,000	594,933,000
LESS REDUCTION FOR SAVINGS & SLIPPAGES		84,933,000
GRAND TOTAL—MISSISSIPPI RIVER & TRIBUTARIES	278,000,000	510,000,000

**MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED
BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES PROJECT MAINTENANCE**

PROJECT	PRESIDENT'S BUDGET	MVFA REQUEST
Wappapello Lake, MO	\$4,768,000	\$7,734,000
Mississippi River Levees	6,400,000	9,000,000
Mississippi River Channel Maintenance	60,280,000	66,600,000

**MISSISSIPPI VALLEY FLOOD CONTROL ASSOCIATION—FISCAL YEAR 2007 CIVIL WORKS REQUESTED
BUDGET—MISSISSIPPI RIVER AND TRIBUTARIES PROJECT MAINTENANCE—Continued**

PROJECT	PRESIDENT'S BUDGET	MVFA REQUEST
Memphis Harbor, TN	1,013,000	1,942,000
Pidgeon Industrial Harbor, TN .....	.....	250,000
Helena Harbor, AR	63,000	402,000
Greenville Harbor, MS	30,000	437,000
Vicksburg Harbor, MS	71,000	385,000
St. Francis River & Tribs, AR	6,300,000	15,250,000
White River Backwater, AR	1,200,000	1,500,000
North Bank, Arkansas River, AR	560,000	560,000
South Bank, Arkansas River, AR	310,000	310,000
Boeuf & Tensas Rivers, LA	2,600,000	4,157,000
Red River Backwater, LA	3,350,000	6,650,000
Yazoo Basin, Sardis Lake, MS	7,199,000	12,425,000
Yazoo Basin, Arkabutla Lake, MS	6,170,000	9,251,000
Yazoo Basin, Enid Lake, MS	5,397,000	12,532,000
Yazoo Basin, Grenada Lake, MS	5,690,000	10,949,000
Yazoo Basin, Greenwood, MS	620,000	1,020,000
Yazoo Basin, Yazoo City, MS	770,000	770,000
Yazoo Basin, Main Stem, MS	1,072,000	1,929,000
Yazoo Basin, Tributaries, MS	830,000	830,000
Yazoo Basin, Whittington Aux Channel, MS	430,000	430,000
Yazoo Basin, Big Sunflower, MS	209,000	2,209,000
Yazoo Basin, Yazoo Backwater, MS	468,000	734,000
Lower Red River, South Bank, LA	66,000	66,000
Bonnet Carre, LA	2,702,000	5,252,000
Old River, LA	9,747,000	17,840,000
Atchafalaya Basin, LA	12,532,000	27,500,000
Atchafalaya Basin Floodway, LA	2,605,000	3,059,000
Baton Rouge Harbor Devil's Swamp, LA	17,000	715,000
Mississippi Delta Region, LA	241,000	349,000
Bayou Cocodrie & Tribs, LA	56,000	56,000
Inspection of Completed Works	1,850,000	1,850,000
Mapping	1,384,000	1,384,000
TOTAL MR&T MAINTENANCE	147,000,000	226,327,000

PREPARED STATEMENT OF THE USA RICE FEDERATION

This is to convey the rice industry's request for fiscal year 2007 funding for selected programs under the jurisdiction of your respective subcommittees. The USA Rice Federation appreciates your assistance in making this letter a part of the hearing record.

The USA Rice Federation is the national advocate for all segments of the rice industry, conducting activities to influence government programs, developing and initiating programs to increase worldwide demand for U.S. rice, and providing other services to increase profitability for all industry segments. USA Rice members are active in all major rice producing States: Arkansas, California, Florida, Louisiana, Mississippi, Missouri, and Texas. The USA Rice Producers' Group, the USA Rice Council, the USA Rice Millers' Association, and the USA Rice Merchants' Association are members of the USA Rice Federation.

USA Rice understands the budget constraints the committee faces when developing the fiscal year 2006 appropriations bill. We appreciate your past support for initiatives that are critical to the rice industry and look forward to working with you to meet the continued water and related needs of the rice industry in the future.

The Mississippi River Valley alluvial aquifer is the primary source of irrigation water for one of the major rice-producing areas in the United States. Groundwater is being withdrawn at such a rate that the aquifer is in danger of being permanently damaged. Irrigation wells are failing. Loss of rice production in this area would result in severe economic and social repercussions to the local, State, and national economies.

Rice producers continue to seek new sources of irrigation for their crops. In many rice-growing regions the aquifers used by rice farmers are the same aquifers used

by local metropolitan populations. Some of these vital aquifers are at risk. Water levels are dropping fast due to deficit rainfall and expanding use from industrial, agricultural, and metropolitan users. Rice producers are working to build new sources of irrigation. The programs listed below are cost-share programs to help rice producers ensure there will be a plentiful water supply for their rice crops and their neighbors in the city. By using surface water from man-made reservoirs, rivers or bayous to irrigate rice crops, these precious aquifers can be saved for future generations. These water projects also provide invaluable wildlife habitat.

To address these critical water needs the USA Rice Federation supports the following:

White River Irrigation Demonstration Project.—Full funding to continue construction on this important Demonstration Project. This project is located in the major rice-growing region of East Arkansas and will help provide the critical water resources necessary for rice production, which plays such a vital role in the economy of Arkansas.

Bayou Meto Basin.—Continued construction funding for this project located in East Central Arkansas in Lonoke, Pulaski, Prairie, Jefferson, and Arkansas counties.

Boeuf Tensas Project.—Continued funding for work on this water project located in portions of Jefferson, Lincoln, Desha, and Chicot counties in Arkansas, as well as portions of Northeast Louisiana.

For California, a very critical wetland wildlife habitat enhancement program was authorized by Section 3406(b)22 of the Central Valley Project Improvement Act. Unfortunately, the funds were sunset in 2002. When fully funded, this program provided funding for the winter flooding of 35,000 to 40,000 acres of important rice wetland habitat in the Pacific Flyway of California. These acres are not only critical to the health of the Flyway for migrating waterfowl, but are also designated as Shorebird Habitat of International Significance by the Western Hemisphere Shorebird Reserve Network. USA Rice supports continuation of the winter flooding incentives program provided by Section 3402(b)22 of the Central Valley Project Improvement Act and requests restored funding for this important effort.

The rice industry also supports continued funding for the Mississippi River and Tributaries Project, and within that, the St. Francis Basin Project which provides flood control and drainage from Cape Girardeau, Missouri to Helena, Arkansas. We also support the St. John's Bayou Project in Missouri and urge that funding be maintained for this project.

Please feel free to contact us if you would like further information about the programs we have referenced. Additional background information is available for all of the programs listed, however, we understand the volume of requests the committee receives and have restricted our comments accordingly.

Thank you for your consideration of our recommendations.

PREPARED STATEMENT OF THE CITY OF SAN MARCOS, TEXAS

Mr. Chairman and members of the subcommittee, on behalf of the City of San Marcos, Texas, I am pleased to submit this statement in support of our request for an earmark of \$439,000 for a U.S. Army Corps of Engineers Section 206 Ecosystem Restoration Project for the San Marcos River in the fiscal year 2007 bill.

The City of San Marcos seeks this allocation for the development of the Detailed Project Report/Integrated Environmental Assessment (DPR/EA) as the next step toward completing a \$4,540,000 project with Federal and local match to restore degraded aquatic and terrestrial habitat in the upper San Marcos River.

San Marcos is located in south central Texas in Hays County, approximately 30 miles southwest of Austin, Texas. The proposed restoration area is located within the city limits of San Marcos along and within the San Marcos River and its headwaters. The study area consists of an approximate 1.0-mile stretch of the San Marcos River and associated riparian corridor. The ecosystem restoration project will restore and enhance degraded aquatic and terrestrial habitat along and within the San Marcos River.

The spring-fed San Marcos River offers one of rarest aquatic ecosystems found in the United States. The headwaters of the river originate from underground springs from the Edwards Aquifer, producing millions of gallons of crystal clear, constant temperature water daily. The river creates a unique ecosystem supporting five threatened or endangered species that live in the San Marcos River (San Marcos salamander, fountain darter, Texas wild rice, San Marcos gambusia, and Comal Springs riffle beetle).

The San Marcos River has attracted humans to its banks for more than 12,000 years, making San Marcos one of the oldest continuously-inhabited places in the United States. The City of San Marcos has strived for the past 40 years to protect the river by establishing parks along its banks and restricting intense development.

Still, the constant use of the popular river over many decades has impacted the riparian and aquatic habitat of the river, requiring restoration of this valuable waterway. The San Marcos River and associated tributaries have experienced aquatic ecosystem degradation due to a variety of human factors. Impoundment of water upstream, in its tributaries, and within the study area has altered the normal flow regime of the San Marcos River. The native aquatic plant communities within the San Marcos River have been diminished by invasive exotic and generalist plant species.

Increased nutrient and sediment loads from overland surface flow, tributary runoff, non-point sources and storm water drainage have reduced water quality and in-stream habitat values within the river. The majority of the bottomland plant community within the study area is highly disturbed and fragmented due primarily to urban encroachment, installation of hardpan surfaces, recreational disturbance and invasion of non-native plant species.

This degradation has resulted in the loss of high-quality in-stream and riparian habitat for plant and wildlife species within the study area. The proposed restoration plan will help restore aquatic and terrestrial habitat that has degraded due to human activity, including critical habitat for the federally-listed species.

The City of San Marcos applied for U.S. Army Corps of Engineers Section 206 Aquatic Restoration Grant funds in 2002 to turn around the trend toward degradation in our river corridor. A Preliminary Restoration Plan (PRP) was developed by the U.S. Army Corps of Engineers and submitted in March 2003. The PRP was approved and moved forward to the next phase, the development of a Detailed Project Report (DPR).

However, at this stage, Federal funding for this program was reduced, placing the City of San Marcos PRP on the back burner. Funding this project is essential to restore integrity to the San Marcos River, the central point of our community for tourism, recreation, and quality of life.

This project will directly benefit the environment by increasing biodiversity, carrying capacity, stability and productivity of native plant and wildlife species endemic to the area. Additional benefits include improvement of existing recreational opportunities, enhancement of water quality, and improvement of natural aesthetics.

Specifically, the project will restore and sustain approximately 22.0 acres of riparian woodland habitat, 6.0 acre of tall grass prairie habitat, 4.0 acres of emergent wetland habitat and 16.0 acres of aquatic habitat within a highly urbanized area. The total project cost is estimated at \$4,540,000, which will be cost-shared 65 percent Federal Government and 35 percent City of San Marcos. The Federal share is \$2,951,000 with a local match of \$1,589,000.

The only COE Section 206 projects that will now receive funding are those that have Congressional support.

Therefore, we ask you to approve a special appropriation earmark for \$439,000 for the San Marcos River Section 206 Project to fund the restoration. Thank you for your consideration of this project.

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to present The Nature Conservancy's recommendations for the Army Corps of Engineers' fiscal 2007 appropriations. We understand and appreciate that the subcommittee's ability to fund programs within its jurisdiction is limited by the tight budget situation but appreciate your consideration of these important programs. My name is Jimmie Powell and I am the Director of Government Relations at the Conservancy.

The Nature Conservancy is an international, nonprofit organization dedicated to the conservation of biological diversity. Our mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Our on-the-ground conservation work is carried out in all 50 States and in 27 foreign countries and is supported by approximately 1 million individual members. We have helped conserve nearly 15 million acres of land in the United States and Canada and more than 102 million acres with local partner organizations globally.

The Conservancy owns and manages approximately 1,400 preserves throughout the United States—the largest private system of nature sanctuaries in the world. We recognize, however, that our mission cannot be achieved by core protected areas alone. Therefore, our projects increasingly seek to accommodate compatible human uses, and especially in the developing world, to address sustained human well-being.

The Conservancy has several concerns with policies required in the fiscal 2006 Energy and Water Appropriations bill and recommends some revisions to those provisions. As the largest non-Federal sponsor of ecosystem restoration projects (in numbers of projects, not total cost) these limitations have had a significant impact on our partnership with the Corps. The Conservancy urges the subcommittee to lift the ban on “new starts”/project advancement, and to revise the restrictions on re-programming of funds. The ban on “new starts”/project advancement has halted a number of our restoration projects which are widely supported by local communities and important to local biodiversity. The Conservancy also urges the subcommittee to revise the limitations on re-programming. Several Conservancy projects, which had conference report language indicating Congressional funding intent, had funds re-programmed and now the Corps cannot reprogram the funds back to those projects.

The Conservancy urges the subcommittee to support the following appropriation levels in the fiscal 2007 Energy and Water Development Appropriation bill:

Construction General Priorities

Section 1135: Project Modification for the Improvement of the Environment.—The Section 1135 Program authorizes the Army Corps of Engineers (Corps) to restore areas damaged by existing Corps projects. This program permits modification of existing dams and flood control projects to increase habitat for fish and wildlife without interrupting a project’s original purpose. This program continues to be in extremely high demand with needs far greater than the \$30 million appropriated in fiscal 2006. This financial shortfall has stopped many important projects. The Conservancy is the non-Federal cost share partner on six ecologically significant Section 1135 restoration projects. These projects include Spunky Bottoms, a floodplain restoration/reconnection project on the Illinois River, which we seek \$150,000 in fiscal 2007; and Chain Bridge Flats, DC/MD/VA, a floodplain restoration on the Potomac River which requires \$210,000 in fiscal year 2007. In order to further reduce the funding backlog, the Conservancy strongly encourages a repeat of \$30.0 million for the Section 1135 program in fiscal 2007, an increase over the President’s \$15.0 million request.

Section 206: Aquatic Ecosystem Restoration.—Section 206 is a newer Corps program that authorizes restoration of aquatic habitat regardless of past activities. This is another popular restoration program with demand far exceeding the \$30 million appropriated for fiscal year 2006. The Conservancy is the non-Federal cost-share partner on 11 Section 206 projects. These projects restore important fish and wildlife habitats. Ecologically significant projects for which the Conservancy is the non-Federal sponsor include: Mad Island, TX, a coastal restoration project that needs \$1.475 million to continue construction; and Camp Creek, OR, a headwaters stream restoration project that needs \$575,000 to continue the feasibility study. In order to further reduce the funding backlog, the Conservancy strongly encourages a repeat of \$30 million for the Section 1135 program in fiscal 2007 an increase over the President’s \$19.9 million request.

Upper Mississippi River System Environmental Management Program.—The Environmental Management Program (EMP) is an important Corps program that constructs habitat restoration projects and conducts long-term resource monitoring of the Upper Mississippi and Illinois Rivers. The EMP operates as a unique Federal-State partnership affecting five States (Illinois, Iowa, Minnesota, Missouri, and Wisconsin). The EMP was reauthorized in WRDA 1999 with an increased authorization in the amount of \$33.2 million. The Conservancy supports full funding of \$33.2 million for fiscal year 2007, an increase over the President’s \$27.0 million request.

Estuary Habitat Restoration Program.—The Estuary Habitat Restoration Program was established with the intent to restore 1 million acres of estuary habitat by 2010. This multi-agency program will promote projects that result in healthy ecosystems that support wildlife, fish and shellfish, improve surface and groundwater quality and quantity, provide flood control; and provide outdoor recreation opportunity. The Conservancy supports the President’s \$5.0 million request for fiscal year 2007.

South Florida Everglades Ecosystem Restoration Program.—The Everglades are home to a profusion of bird species, with 347 species recorded within Everglades National Park alone. The ecosystem provides breeding habitat for roseate spoonbills, snail kite, southern bald eagle, Cape sable seaside sparrow, wood stork, white ibis, glossy ibis and 11 species of egrets and herons. Beginning 60 years ago, the Corps

began building projects for human benefit that shunted water away from the Everglades. Many factors, including these flood control projects and agricultural and urban development, have contributed to the reduction and degradation of the wetlands ecosystem. Restoration of this globally significant region is a priority for the Conservancy. The Conservancy requests \$207 million in the South Florida Everglades Ecosystem Restoration Program in fiscal year 2007. This program includes the following suite of restoration programs:

- Modified Water Deliveries to Everglades National Park (\$35 million).*—This project balances fresh water crossing Tamiami Trail and entering the park. Completing this project is a pressing concern to restore habitat and stave off the danger of an estuarine collapse in Florida Bay.
- Critical Projects Construction (\$15 million).*—This special program is made up of nine projects that are critical to the future of the entire ecosystem's restoration. Fiscal year 2007 projects will include completion of construction on the Lake Okeechobee Water Retention Areas and Ten Mile Creek projects and continuing construction on the Seminole Big Cypress project.
- Kissimmee River Restoration Construction (\$50 million).*—This project involves restoring water-level fluctuations and seasonal discharges from Lakes Kissimmee, Cypress and Hatchineha in the upper basin. This project features 22 miles of canal backfilling and structure removal along with land acquisition of over 100,000 acres.
- Comprehensive Everglades Restoration Plan (CERP) Project Construction (\$20 million).*—Components of this plan include aquifer storage and recovery; construction of surface water storage reservoirs; construction of storm water treatment areas; seepage management; removal of 240 miles of barriers to sheet flow; and reuse of wastewater at two regional plants.
- Central and Southern Florida Project to include the C111, CERP, and STA 1 East projects (\$87 million).*—This program includes the Upper St. Johns, Manatee Protection, C-51 and STA-1E, C-111, Miami Canal Study and 10 initial projects of the CERP. Recent progress includes initial construction of manatee pass gates, with all gates expected to be completed this year; completed construction on the C-51 and transfer of operations to the South Florida Water Management District; and continuing design for the next phase of buffer construction for the C-111 project.

General Investigation Priorities

Savannah Basin Comprehensive Water Resources Study.—The Savannah Basin Comprehensive Water Resources Study will enable the Corps and other partners to gain a better understanding of the influence of hydrologic processes such as timing, duration, frequency, magnitude, and rate of change of river flows on the river's ecology. The Nature Conservancy, under a cooperative agreement funded by the Corps and its cost share partners, Georgia and South Carolina, developed a set of ecosystem flow recommendations for the Savannah River Basin. A test release of the new flow recommendation was conducted March 15–18, 2004 and again in fall 2005. The Conservancy supports \$250,000 in fiscal year 2007. This study is not included in the President's budget.

Willamette River Floodplain Study.—This project will contribute to the long-term restoration of floodplain habitat in the Willamette River Basin, an important step toward the recovery of several threatened fish species listed under the Endangered Species Act. The restoration efforts associated with the Willamette River Floodplain Restoration Study, including increasing floodplain connectivity and replanting riparian forests, will contribute to the Corps' ability to reduce river temperatures and meet their obligations under the Clean Water Act. This project also leverages a unique national partnership between the Corps and the Conservancy, the Sustainable Rivers Project, to improve dam management in order to protect the ecological health of rivers and surrounding natural areas while continuing to provide services such as flood control and power generation. The Conservancy supports \$436,000 in fiscal year 2007. This study is not included in the President's budget.

Operations and Maintenance Priorities

Missouri River Fish and Wildlife Recovery.—The Missouri River has an extensive and diverse array of aquatic and terrestrial systems that have had a dominant influence on the basin's biological diversity. A predictable yet dynamic interaction of aquatic and terrestrial ecological processes support more than 500 species of muskels, fish, amphibians, reptiles, birds and mammals. The Corps has completed 30 projects along the river in the lower four States (Iowa, Kansas, Missouri and Nebraska) resulting in over 40,000 acres of restored aquatic and floodplain habitat. The Missouri River Fish and Wildlife Recovery Program will not only enhance these

restoration efforts, but complement protection and restoration efforts by the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Department of Defense, U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service and the Natural Resources Conservation Service in the entire river basin. Three species dependent on the Missouri River are federally-listed as endangered or threatened, two are candidates for Federal listing, and at least eight are species of special concern to State or Federal fish and wildlife management agencies. The Conservancy supports an appropriation in the amount of \$85.0 million in fiscal year 2007.

Thank you for the opportunity to present The Nature Conservancy's comments on the Energy and Water Appropriations bill. We recognize that you receive many worthy requests for funding each year and appreciate your consideration of these requests and the generous support you have shown for these and other conservation programs in the past. If you have any further questions, please do not hesitate to contact me.

PREPARED STATEMENT OF THE OUACHITA RIVER VALLEY ASSOCIATION

Mr. Chairman and distinguished members of the committee, thank you for the opportunity to present this testimony. The Ouachita-Black Navigation Project is the backbone of much of the economy of our region supporting employment, municipal water supplies, recreation, wildlife habitat and conservation of the endangered Sparta Aquifer. The Project was authorized by the River and Harbor Act of 1950 and modified by the River and Harbor Act of 1960. The 337-mile Ouachita-Black Navigation System is the only commercially navigable waterway serving the 11 Parishes and Counties in northeast Louisiana and Southeast Arkansas.

As a nonprofit organization, the Ouachita River Valley Association has worked with private enterprise and governments at the Federal, State, and local levels for more than 100 years to encourage investments in projects that are economically sound, socially justified and enhance the general welfare of the people in the Ouachita River basin in Arkansas, Louisiana, and the Nation.

Mr. Chairman, we are grateful for the \$13.9 million appropriated in fiscal year 2006 that is permitting significant lock maintenance to be performed for the first time in several years. This work is crucial since all project benefits depend upon the adequacy of the four small locks and dams (84 feet by 600 feet) that have been in place for up to 30 years without adequate maintenance.

The lack of investment in routine maintenance on Ouachita-Black Navigation Project is symptomatic of infrastructure problems throughout the country as was tragically demonstrated during the hurricanes of 2005 which passed on both sides of the Ouachita Basin.

We submit our funding request in three major categories for your consideration. The first and foremost need is that of Operations and Maintenance, General (O&M) funding; second is the need for funding for stabilization of eroding banks that are endangering existing public and private infrastructure; and the third is funding for a study to identify and document the contributions of this waterway to the Nation and the region it serves in Louisiana and Arkansas.

OPERATION AND MAINTENANCE, GENERAL

Historical funding shortfalls for Operations and Maintenance (O&M) are seriously threatening the reliability and dependability of the Ouachita-Black Navigation System. The waterway is an important industrial/agricultural economic generator, vital transportation artery, irreplaceable source for municipal, industrial and agricultural water supplies, a vast recreational asset and natural resource preservation project serving this region and the Nation. These many benefits depend upon safe and reliable operation of four locks and dams and periodic channel maintenance work. Programmed maintenance has been demonstrated to be and is intuitively more economical than breakdown maintenance. Economic losses from service failures brought about by long-term system closures are magnified by unscheduled and more costly "break down" repairs.

An ominous concern specific to the Ouachita-Black System is the inability to dewater the locks to inspect critical lock components and to repair them in a timely manner without long and costly outages. Absent the stoplog slots, a failure of the lock miter gates and other underwater components as a result of deterioration or a marine accident will require months or years to repair as compared to weeks with a working stoplog system. Jonesville Lock was modified with stoplog slots in fiscal year 2004 to provide this capability. However, funding provided in fiscal year 2005 was insufficient to continue this work at the three upstream structures. Work is

continuing this year at Columbia Lock and Dam and with the requested funding for fiscal year 2007 work can continue upstream to Felsenthal Lock and Dam. We strongly urge and recommend that the highest priority be given to continuation of the stoplog slot installation program followed closely with inspection and repair of the critical components that have not been maintained for 30 years.

—Request is made for \$14.0 million for routine operations, continuation of the stoplog slot modification program, repair of critical components, initiation of preventive maintenance work, and channel maintenance dredging. This amount is well below the \$17.25 million identified as the capability of the Corps of Engineers to perform in fiscal year 2007.

CONSTRUCTION GENERAL, BANK STABILIZATION

The Ouachita River continues to erode the most vulnerable banks with annually rising and falling river stages. The rate and degree of this attack has increased and is now endangering critical public infrastructure such as levees and State highways. Levees have been “set back” at several locations in the past year and bank caving is occurring on the shoulders of Louisiana State Highways 8 and 124. The most severe threat from this erosion is to the levees protecting the cities of Columbia and Monroe. Studies conducted by the Tensas Basin Levee District indicate damages from a failed levee at flood stage would result in damages up to \$2 billion with extensive residential and business flooding, and rupture of transportation features such as the municipal airport and Interstate Highway 20.

Protection of infrastructure such as levees, roads and bridges, ports, as well as historical sites is best and most economically provided by judicious hardening or stabilizing the banks of the river. A Corps of Engineers Status Report identified numerous caving sites the length of the river to Rummel Dam and prioritized them for protection. In absence of project authorization, appropriation action is requested. Prevention of damages is more economical than repair and replacement.

—Request is made for \$5.0 million for bank protection at the highest priority sites. Proposed Bill and Report language are attached.

GENERAL INVESTIGATIONS, POST-CONSTRUCTION BENEFIT STUDY

Investment in our Nation’s resources should be an integral part of our national defense strategy and receive this level of consideration in the national budget. Water resource infrastructure is the backbone of production in the Nation and our means to competitiveness in the global economy. Development and redevelopment of these resources utilizing Federal funds should be thoroughly evaluated and justified on the basis of sound investments. This requires study and evaluation periodically to ensure the maximum return on the public investment.

Difficulty in providing acceptable evidence of waterway benefits frequently casts unwarranted doubt on the advisability of funding specific water resource projects. Efforts to abandon significant portions of the national waterway infrastructure based on narrowly defined, short-term measures of value or outdated uses based on 30-year-old data will almost always result in unintended consequences. Such is the case with the argument that “low use waterways or tributaries should be abandoned” budget-wise for the main-stem waterways. Analysis of Waterborne Commerce Statistics Center data by Institute for Water Resources and TVA reveals that 68 percent of cargo tonnage and 56 percent of waterway ton-miles are generated on tributary streams. The consequence of this action would be a decrease in benefits of the main-stem waterways while increasing the cost of the Nation’s transportation. The ancillary benefits such as water supply, recreation and conservation generated in connection with navigation projects are perhaps even greater than transportation benefits and should be determined in greater detail through basin specific studies. Such a study is needed for the Ouachita-Black Navigation Project and the basin.

—Funds in the amount of \$250,000 are requested to conduct a post-construction benefit evaluation of the Ouachita-Black Navigation System to provide a basis for future levels of investments.

SUMMATION

Mr. Chairman we appreciate the opportunity to bring these issues to the attention of the committee and to add our voice to those working to strengthen our Nation through wise investment in our natural resources from which springs our wealth. Investments by the Federal Government in the Ouachita-Black Navigation System have and are continuing to make a significant difference in the lives of the people residing in the valley while contributing to the Nation at-large. For this we are grateful. We urge the Congress through its power of the budget to continue maintaining through very modest investments this important component of the national

waterway infrastructure. Proposed Bill and Report Language are enclosed for bank stabilization work.

BILL LANGUAGE

Ouachita and Black Rivers Bank Stabilization, Arkansas and Louisiana

“Provided further, That using the funds appropriated herein, the Secretary of the Army, acting through the Chief of Engineers, is authorized and directed to design and construct bank stabilization measures, at Federal expense with local sponsors providing necessary lands, easements, and rights of way, along the Ouachita and Black Rivers, Arkansas and Louisiana, between mile 0 on the Black River, Louisiana, to mile 460 on the Ouachita River, Arkansas at the outlet of Remmel Dam, such measures to be constructed as the Secretary determines necessary to maintain navigation, for flood damage prevention, for control of erosion and for historic preservation.”

REPORT LANGUAGE

Ouachita and Black Rivers Bank Stabilization, Arkansas and Louisiana

“The Committee is aware of the severe bank caving and erosion occurring along the Ouachita and Black Rivers, Arkansas and Louisiana, between mile 0 on the Black River, Louisiana, to mile 460 on the Ouachita River, Arkansas at the outlet of Remmel Dam and has included bill language directing the Corps of Engineers to use funds provided, to design and construct bank stabilization measures, at Federal expense with local sponsors providing necessary lands, easements, and rights of way, along the Ouachita and Black Rivers, Arkansas and Louisiana, as the Secretary determines necessary to maintain navigation, for flood damage prevention, for control of erosion, and for historical preservation.”

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

Mr. Chairman and members of the committee, I am Wayne Dowd, and pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the Citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin, Enclosure 1.

The Resolutions contained herein were adopted by the Association during its 81st Annual Meeting in Bossier City, Louisiana, on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, Enclosure 2.

The President's budget included \$4.733 billion for the civil works programs. Even though it is the largest budget provided by any administration it is \$596 million less than what was appropriated in fiscal year 2006, \$5.329 billion (11.2 percent reduction). The problem is also how the funds are distributed. A few projects received their full “Corps Capability” to the detriment of many projects that received no funding. The \$4.733 billion level does not come close to the real needs of our Nation. A more realistic funding level to meet the requirements for continuing the existing needs of the civil works program is \$6.5 billion in fiscal year 2007. The traditional civil works programs remain at the low, unacceptable level as in past years. These projects are the backbone to our Nation's infrastructure for waterways, flood control, water supply and ecosystem restoration. We remind you that civil works projects are a true “jobs program” in that up to 85 percent of project funding is contracted to the private sector, 100 percent of the construction, as well as much of the architect and engineering work. Not only do these projects provide jobs, but provide economic development opportunities for our communities to grow and prosper, creating permanent jobs.

There are several policy changes proposed by the administration that we have concerns with.

Major rehabilitation projects were moved from the CG account to O&M account. When you take out these major rehab projects the O&M proposed budget is actually \$53 million less than fiscal year 2006. They have “disguised” an actual reduction in O&M project funding.

They also propose to continue using the Inland Waterway Trust Fund (IWTF) to fund 50 percent of the major rehab projects that were moved to O&M. The IWTF was authorized for CG projects, not O&M. If this is allowed, it will then be easy to recommend that all O&M funding be taken from the IWTF and this can never be allowed to happen.

The proposed reduction in GI from \$162 million enacted last year, to \$94 million, proposed this year, is of concern. When you stop funding studies you assume the economy will stop growing, since you are preparing less projects for the future. Nobody is a proponent for a weak economy. There is also the danger of the Corps losing their planning expertise.

Another proposal allocates O&M funding by region and eliminates funding by individual project. We do not accept this concept since you will lose ownership and identity of each project; therefore, losing grass root support. If this was done, due to reprogramming constraints, then reprogramming should be addressed. Major reprogramming issues are with CG projects, not with O&M projects.

We want to express our concern for "fully funded" contracts. It is possible that the Corps will have a carryover that exceeds \$1 billion. Our fear is that this will be viewed as the Corps unable to execute their budget and be allocated less in following years. Another serious consequence is that it neglects the workload distribution of Corps Districts. Are we prepared to consolidate and close down Districts that do not have a workload to support their current work force?

The Corps of Engineers should not be micromanaged and should have less restrictive reprogramming authority. They need to be able to manage their budget and projects in a way that best serves the needs of the Nation.

In the past we have worked hard to "add" funding to the Energy and Water Bill for the Water projects. We want to bring to your attention that in fiscal year 1998 the Water projects received approximately 20 percent of the total bill. Over the last 8 years the Water portion has steadily decreased to only 16.6 percent of the total bill in fiscal year 2005 and increased slightly to 17.4 percent in fiscal year 2006. The Nation's Energy program is very important, but we believe the Water program is too. We ask that the subcommittee on Energy and Water and the full Appropriations Committee support bringing the Water "share" of the bill back to the 20 percent level it once was.

The inland waterway tributary rivers continue to face scrutiny on what determines a successful waterway. This has an impact on the operations and maintenance funding a waterway receives. Using criteria that only considers tons, actually moved on the waterway, neglects the main benefit that justified the original waterway project, transportation cost savings. Currently there is no criteria used to consider "water compelled rates" (competition with rail). We know that there are industries not using our waterway because rail rates were reduced, to match the waterborne rates, the same year our waterway became operational. If the operation of our waterway were terminated the rail rates would increase. Many industries have experienced great "national" transportation savings without using the waterway, which is why the project was authorized.

The main problem is that there is no "post-project" evaluation for navigation projects. We support the development of such an evaluation and volunteer the J. Bennett Johnston Waterway and our efforts to develop one. Such an evaluation could be made once every 5 years to insure the waterway continues to meet the determined criteria. We also believe any evaluation adopted must have input from and be validated by the administration, Congress and industry. Too much money has been expended to use an evaluation that is unfair and disregards the true benefits realized from these waterway projects.

I would now like to comment on some of our specific requests for the future economic well-being of the citizens residing in the four-State Red River Basin regions.

Navigation.—The J. Bennett Johnston Waterway is living up to the expectations of the benefits projected. We are extremely proud of our public ports, municipalities and State agencies that have created this success. This upward "trend" in usage will continue as new industries commence operations. At the Port of Shreveport-Bossier "Steelscape" will be operational in April 2006 processing steel, eventually employing 250 people and moving 500,000 tons per year on the Waterway. A major power company, CLECO, is investing \$1 billion in its Rodemacher Plant near Boyce, Louisiana, on the lower Red River and is expected to move over 3 million tons of Coal and "petroleum coke" by 2009. Groundbreaking is set this year for an Edison-Chouest facility, a shipbuilder of offshore support vessels, at the Port of Shreveport-Bossier. These three projects are a reality and there are many more customers considering using our Waterway.

You are reminded that the Waterway is not complete, 6 percent remains to be constructed, \$121 million. We appreciate Congress's appropriation level in fiscal year 2006 of \$13 million, however, the President's fiscal year 2007 budget drastically cuts that to \$1.5 million, which is unacceptable. There is a capability for \$18.5 million of work, but we realistically request \$13 million to keep the project moving toward completion.

Now that the J. Bennett Johnston Waterway is reliable year round we must address efficiency. Presently a 9-foot draft is authorized for the J. Bennett Johnston Waterway. All waterways below Cairo, Illinois are authorized at 12-foot, to include the Mississippi River, Atchafalaya River, Arkansas River and Gulf Intracoastal Waterway. A 12-foot channel would allow an additional one-third capacity, per barge, which will greatly increase the efficiency of our Waterway and further reduce transportation rates. This one action would have the greatest, positive impact to reduce rates and increase competition, bringing more industries to use waterborne transportation. We request a 1-year reconnaissance study be funded to evaluate this proposal, at a cost of \$100,000. Fact: Approximately 95 percent is already at 12-foot year round.

The feasibility study to continue navigation from Shreveport-Bossier City, Louisiana, into the State of Arkansas will be completed in calendar year 2006. There is great optimism that the study will recommend a favorable project; however, the administration must consider the benefit analysis by modern day criteria, not by 25-year-old standards. Benefit analysis is by administration policy and they can consider benefits that impact society today. This region of SW Arkansas and NE Texas continues to suffer major unemployment and this navigation project, although not the total solution, will help revitalize the economy. We request funding of \$400,000 to initiate planning, engineering and design, PED.

Bank Stabilization.—One of the most important, continuing programs, on the Red River is bank stabilization in Arkansas and North Louisiana. We must stop the loss of valuable farmland that erodes down the river and interferes with the navigation channel. In addition to the loss of farmland is the threat to public utilities such as roads, electric power lines and bridges; as well as increased dredging cost in the navigable waterway in Louisiana.

These bank stabilization projects are compatible with subsequent navigation into Arkansas and we urge that they be continued in those locations designated by the Corps of Engineers to be the areas of highest priority. We appreciated the Congressional funding in fiscal year 2006 and request you fund this project at a level of \$10 million in fiscal year 2007.

Flood Control.—The recent events in New Orleans have demonstrated what will happen when we ignore our levee systems. We know the Arkansas Red River Levees do not meet Federal standards, which is why we have the authorized project, Red River Below Denison Dam, TX, AR & LA. Now is the time to bring these levees up to standards, before a major flood event, which will occur.

We continue to consider flood control a major objective and request you continue funding the levee rehabilitation projects ongoing in Arkansas. Five of eleven levee sections have been completed and brought to Federal standards. Appropriations of \$10 million will construct two more levee sections in Lafayette County, AR.

The levees in Louisiana have been incorporated into the Federal system; however, they do not meet current safety standards. These levees do not have a gravel surface roadway, threatening their integrity during times of flooding. It is essential for personnel to traverse the levees during a flood to inspect them for problems. Without the gravel surface the vehicles will cause rutting, which can create conditions for the levees to fail. A gravel surface will insure inspection personnel can check the levees during the saturated conditions of a flood. Funding has been appropriated in the past and approximately 50 miles of levees in the Natchitoches Levee District will be completed this year. We request \$2 million to continue this important project in other Louisiana Parishes.

Water Quality.—Nearly 3,500 tons of natural salts, primarily sodium chloride, enter the upper reaches of the Red River each day, rendering downstream waters unusable for most purposes. The Truscott Brine Lake project, which is located on the South Fork of the Wichita River in King and Knox Counties, Texas became operational in 1987. An independent panel of experts found that the project not only continues to perform beyond design expectations in providing cleaner water, but also has an exceptionally favorable benefit-to-cost ratio.

The Assistant Secretary of the Army (Civil Works), in October 1998, agreed to support a re-evaluation of the Wichita River Basin tributary of the project. The re-evaluation report was completed and the Director of Civil Works signed the Environmental Record of Decision. The plan was found to be economically justified. This year the ASA (CW) directed that construction would not proceed until a local sponsor was found to assume 100 percent of the O&M for the project. We strongly disagree with this position, since the current local sponsor signed a cooperation agreement that did not include responsibility for O&M, no project documents require this and the project truly benefits four States. This makes it unreasonable to place the O&M burden on one local sponsor. Since 1987 the Federal Government has funded over \$1.5 million per year for O&M on the existing features of the project. We sup-

port language that directs 100 percent of the O&M and construction responsibility be federally funded. Completion of this project will reclaim Lake Kemp as a usable water source for the City of Wichita Falls, Sheppard AFB and the region.

This project will provide improved water quality throughout the four States of the Red River providing the opportunity to use surface water and reduce dependency on ground water. We request appropriations of \$2,500,000 to continue the Wichita River features in Texas.

Over the past year there has been a renewed interest by the Lugart-Altus Irrigation District to evaluate construction of Area VI, of the Chloride Control Project, in Oklahoma. They have obtained the support of many State and Federal legislators, as well as a letter from the Oklahoma Governor in support of a re-evaluation report. We request an appropriation of \$1,625,000 to continue with this effort.

Water Supply.—Lake Kemp, just west of Wichita Falls, TX, is a major water supply for the needs of this region. Due to siltation the available storage of water has been impacted. A \$750,000 reallocation study is needed to determine water distribution needs and raising the conservation pool. \$375,000 is needed in fiscal year 2007. Since \$207,000 is required for the base annual O&M of Lake Kemp, a Total O&M of \$582,000 is requested for fiscal year 2007.

Operation & Maintenance.—Full O&M capability levels are not only important for our Waterway project but for all our Corps projects and flood control lakes. The backlog of critical maintenance only becomes worse and more expensive with time. We urge you to appropriate funding to address this serious issue at the expressed full Corps capability.

We are sincerely grateful to you for the past support you have provided our projects. We hope that we can count on you again to fund our needs and complete the projects started that will help us diversify our economy and create the jobs so badly needed by our citizens. We have included a summary of our requests for easy reference, Enclosure 2.

Thank you for the opportunity to present this testimony and project details of the Red River Valley Association on behalf of the industries, organizations, municipalities and citizens we represent throughout the four-State Red River Valley region. The Civil Works program directly relates to national security by investing in economic infrastructure. If waterways are closed companies will not relocate to other parts of the country—they will move overseas. If we do not invest now there will be a negative impact on our ability to compete in the world market threatening our national security.

ENCLOSURE 1

RED RIVER VALLEY ASSOCIATION

The Red River Valley Association is a voluntary group of citizens bonded together to advance the economic development and future well-being of the citizens of the four-State Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 81 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various Port Authorities, Chambers of Commerce, Levee and Drainage Districts, Industry, Municipalities and other local governing entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 81st Annual Meeting in Bossier City, Louisiana on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin area as they pertain to the goals of the Association, specifically:

- Economic and Community Development;
- Environmental Restoration;
- Flood Control;
- Bank Stabilization;
- A Clean Water Supply for Municipal, Industrial and Agricultural Uses;
- Hydroelectric Power Generation;
- Recreation; and,
- Navigation.

The Red River Valley Association is aware of the constraints on the Federal budget, and has kept those constraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in the Resolutions, we urge the members of Congress to review the materials contained herein and give serious consideration to funding the projects at the levels requested.

ENCLOSURE 2

RED RIVER VALLEY ASSOCIATION FISCAL YEAR 2007 APPROPRIATIONS—CIVIL WORKS

[In thousands of dollars]

	Fiscal Year 2006 Approp	RRVA 2007 Request	President 2007 Budget	Local Sponsor Requirements
Studies (GI):				
Continue Navigation into SW Arkansas: Feasibility Study.	150	400	.....	(ARRC)
Red River Waterway, LA—12 foot Channel, Recon Study.	.....	100	.....	N/A
Bossier Parish, LA	75	258	.....	Bossier Levee
Cross Lake, LA Water Supply Supplement	99	252	.....	(Shreveport)
Mangum Lake, OK .....	.....	59	.....
Southeast Oklahoma Water Resource Study: Feasibility	40	300	.....	(OWRB)
Washita River Basin, OK, Watershed Rehab: Recon Study.	50	195	.....	(?)
SW Arkansas Ecosystem Restoration: Recon Study	100	400	.....	(L)
Mountain Fork River Watershed, OK & AR, Recon Study	.....	.....	.....	(?)
Red River Above Denison Dam, TX & OK: Recon Study	.....	100	.....	(L)
Red River Waterway, Index, AR to Denison Dam, Recon	.....	.....	.....	(?)
Wichita River Basin Study, TX .....	.....	100	.....
Construction General (CG):				
Red River Waterway:				
J. Bennett Johnston Waterway, LA	13,000	18,500	1,500	
Index to Denison Reach, Bendway Weir Demo Project (Note: Need language for full federally funded project).	.....	.....	.....	(?)
Chloride Control Project:				
Wichita River, TX	1,125	2,500	.....
Area VI, OK	375	1,625	.....
Red River Below Denison Dam	3,000	10,000	.....
Levee Rehabilitation, AR .....	.....	.....	.....
Bowie County Levee, TX .....	.....	.....	.....
Upgrade Levees, LA .....	.....	.....	.....
Rehabilitate Levee Structures, LA .....	.....	.....	.....
Red River Emergency Bank Protection	3,200	10,000	.....
Big Cypress Valley Watershed, TX: Section 1135	530	500	.....
McKinney Bayou, AR, PED .....	.....	.....	.....
Little River County/Ogden Levee, AR, PED .....	.....	200	.....	100 (ASWC)
Millwood, Grassy Lake, AR: Section 1135	100	125	.....	(?)
Operation and Maintenance (O&M):				
J. Bennett Johnston Waterway, LA	11,804	21,000	10,542	
Lake Kemp, TX Reallocation Study .....	.....	582	.....
Lake O' the Pines Dam, TX .....	.....	250	.....
Mississippi River & Tributaries (MR&T):				
Old River Lock:				
Old River Lock Structure	9,690	10,000	9,747	
Old River Lock Oxbow Dredging .....	.....	600	.....

Note.—Local Sponsor Column—Sponsor indicated in (): (?) indicates No Sponsor Identified and need one to continue. (L) indicates Sponsor not required now, but need one for feasibility; Blank—No Sponsor required.

PREPARED STATEMENT OF THE CALAVERAS COUNTY WATER DISTRICT

Project	Requests
COSGROVE CREEK FLOOD CONTROL PROJECT (Construction General)	\$100,000
NEW HOGAN LAKE REOPERATION STUDY (General Investigations)	200,000

CALAVERAS COUNTY WATER DISTRICT

Calaveras County (County) is located in the central Sierra Nevada foothills about 25 miles east of the Sacramento-San Joaquin Delta (Delta). Ground elevations within the County increase from 200 feet above mean sea level near the northwest part of the County to 8,170 feet near Alpine County. It is a predominately rural county

with a relatively sparse but rapidly developing population and limited agricultural and industrial development. Calaveras County is located within the watersheds of the Mokelumne, Calaveras, and Stanislaus Rivers.

All three of these rivers flow west, running through San Joaquin County into the Delta. Most of the County is underlain by the igneous and metamorphic rocks of the Sierra Nevada. Alluvial deposits of the Central Valley, which overlie the westward plunging Sierra Nevada, are present along an 80-square-mile area located along the western edge of the county and are part of the Eastern San Joaquin Groundwater Basin (ESJGCB).

In the fall of 1946, the Calaveras County Water District (CCWD) was organized under the laws of the State of California as a public agency for the purpose of developing and administering the water resources in Calaveras County. Therefore, CCWD is a California Special District and is governed by the California Constitution and the California Government and Water Codes. CCWD is not a part of, or under the control of, the County of Calaveras. CCWD was formed to preserve and develop water resources and to provide water and wastewater service to the citizens of Calaveras County.

Under State law, CCWD, through its board of directors, has general powers over the use of water within its boundaries. These powers include, but are not limited to: the right of eminent domain, authority to acquire, control, distribute, store, spread, sink, treat, purify, reclaim, process and salvage any water for beneficial use, to provide sewer service, to sell treated or untreated water, to acquire or construct hydroelectric facilities and sell the power and energy produced to public agencies or public utilities engaged in the distribution of power, to contract with the United States, other political subdivisions, public utilities, or other persons, and subject to the California State Constitution, levy taxes and improvements.

COSGROVE CREEK FLOOD CONTROL PROJECT

The Cosgrove Creek Flood Control Project will address flooding that occurs along the lower reaches of the creek, as well as flooding that occurs on Spring Creek. Flooding in these areas impacts over 400 people and 100 structures located in the 100-year floodplain. Within the context of the flood control effort, the project will also address options for the beneficial use of peak flows and address other local concerns such as the need for recreational opportunities in the area.

The Calaveras County Water District respectfully requests \$100,000 for this project in fiscal year 2007 from the Corps of Engineers Construction General account.

NEW HOGAN LAKE REOPERATION STUDY

Funding for this project is needed to continue the study effort by the U.S. Army Corps of Engineers to examine other project purposes including water uses efficiency, ecosystem restoration and recreation. The New Hogan Lake Reoperation Study continues the study effort initiated under Section 205 for reoperation of the New Hogan Reservoir and for the Corps to look at other project purposes including water use efficiency, ecosystem restoration and recreation.

The Calaveras County Water District respectfully requests \$200,000 from the Corps of Engineers General Investigations Account to continue this study effort.

PREPARED STATEMENT OF THE CITY OF ST. HELENA, CALIFORNIA

Project	Requests
ST. HELENA COMPREHENSIVE FLOOD CONTROL PROJECT (General Investigations)	\$450,000
UPPER YORK CREEK DAM REMOVAL AND RESTORATION PROJECT (Section 206 Aquatic Ecosystem Restoration Program)	1,600,000
ST. HELENA NAPA RIVER RESTORATION PROJECT (Section 206 Aquatic Ecosystem Restoration Program)	350,000

CITY OF ST. HELENA

The City of St. Helena is located in the center of the wine growing Napa Valley, 65 miles north of San Francisco. The area was settled in 1834 as part of General Vallejo's land grant. The City of St. Helena was incorporated as a city on March 24, 1876 and reincorporated on May 14, 1889.

The City of St. Helena is a General Law City and operates under the Council-City Manager form of government. St. Helena is a full service city and encompasses an area of 4 square miles. The City Council is the governing body and has the power

to make and enforce all laws and set policy related to municipal affairs. The official population of the City of St. Helena as of January 1, 2003 is 6,041. Because of its size and its rural nature, St. Helena has serious infrastructure, as well as, flood protection and environmental needs that far exceed its financial capabilities.

The city from its inception has served as a rural agricultural center. Over the years, with the growth and development of the wine industry, the city has become an important business and banking center for the wine industry. The city also receives many tourists as a result of the wine industry. While, the main goal of the city is to maintain a small-town atmosphere and to provide quality services to its citizens, this is becoming increasingly difficult. Regulatory, administrative and resource requirements placed on the city through the listing of threatened and endangered species under the Endangered Species Act on the Napa River, as well as significant Clean Water Act requirements require the city with a small population base to face significant financial costs.

The Napa River flows along the east boundary of the City of St. Helena in northern Napa County. The overall Napa River Watershed historically supported a dense riparian forest and significant wetland habitat. Over the last 200 years, approximately 6,500 acres of valley floor wetlands have been filled in and 45,700 acres of overall watershed have been converted to urban and agricultural uses. This degradation of natural habitats has had a significant effect on water quality, vegetation and wildlife, and aquatic resources within the Napa River Watershed.

Surface water quality of the Napa River is dependent upon time of year, runoff from York and Sulphur Creeks, and urban area discharges. During the winter months when stream flow is high, pollutants are diluted; however, sedimentation and turbidity is high as well. During the summer months when stream flow is low, pollutants are concentrated and oxygen levels are low, thereby decreasing water quality. Agricultural runoff adds pesticides, fertilizer residue, and sometimes sediment. Discharges from urban areas can include contaminated stormwater runoff and treated city wastewater. The Napa River has been placed on the Clean Water Act 303(d) list and TMDL Priority Schedule due to unacceptable levels of bacteria, sedimentation, and nutrients. It is against this backdrop that the City of St. Helena faces its biggest challenges.

ST. HELENA COMPREHENSIVE FLOOD CONTROL PROJECT

The project site is on the City of St. Helena in Napa County, California (County), along the Napa River and adjacent areas. Within and adjacent to this reach of the River, the city proposes various flood control components, ranging from widening the floodplain and constructing new floodwalls and levee, to relocating homes. An additional component includes flood protection at the Wastewater Treatment Plant (WWTP) south of the city.

With this project, the City of St. Helena seeks to develop and implement a plan that will reduce damage resulting from Napa River flooding in a manner that is economically feasible, acceptable from a public policy standpoint, and environmentally sensitive. In particular, the city wishes to reduce flooding in a manner that will result in overall improvement to the health of the ecosystem in the project reach.

The project will re-connect the Napa River to its historic floodplain, thereby reducing water surface elevations through the area by several feet, avoiding large flood control structures and canalization, and would provide 100-year flood protection to the area. It will also restore habitat of the natural floodplain terraces, including riparian and aquatic habitat. Within and adjacent to this reach of the River, the city proposes various flood control components, ranging from widening the floodplain and constructing new floodwalls and levee, to relocating homes. The St. Helena Comprehensive Project will also restore native plant and tree communities through re-vegetation efforts.

The City of St. Helena respectfully requests the committee's support for \$450,000 under the Corps of Engineers General Investigations Account.

UPPER YORK CREEK DAM REMOVAL AND RESTORATION PROJECT

The Upper York Creek Watershed originates at the western side of the Napa Valley watershed and the creek flows through a narrow canyon before joining the Napa River at a 225-foot elevation.

This project will improve fish passage and ecological stream function for the York Creek, a key Napa River Tributary. The project will open an additional 2 miles of steelhead habitat upstream from the current dam location by removing an earthen dam and accumulated sediment necessary to restore fish passage to provide unimpeded upstream adult and downstream juvenile fish passage.

Revegetation, as part of the project, will restore a self-sustaining native plant community that will help exclude non-native invasive species.

The City of St. Helena respectfully requests the committee's support for \$1,600,000 under the Corps of Engineers Section 206 Aquatic Ecosystem Restoration Program to design and initiate construction under a design build contract in fiscal year 2007.

ST. HELENA NAPA RIVER RESTORATION PROJECT

The Napa River and its riparian corridor are considered Critical Habitat for Steelhead and Salmon recovery. The Steelhead is one of six Federally-listed threatened and endangered species within the Napa River and its adjoining tributaries which requires attention. Current conditions are such that natural habitats and geomorphic processes of the Napa River are highly confined with sediment transport and geomorphic work occurring in a limited area of the streambed and channel banks. Napa River's habitat for the steelhead is limited in its ability to provide prime spawning habitat. Limitations include urbanization removing significant amounts of shading and cover vegetation within and adjacent to the river; and a detrimental lack of pool habitat.

In an effort to address these Federal environmental issues, the St. Helena Napa River Restoration Project, a Section 06 Aquatic Ecosystem Restoration Project, was identified in the Napa Valley Watershed Management Feasibility Study of April 2001 as a specific opportunity for restoration.

This project will develop riparian planting regimes to maximize habitat values for species, in particular, steelhead, California Freshwater Shrimp and young salmon.

This project will address the lack of shading and cover vegetation along the river which has impaired the river's ability to serve as a critical habitat for many different species of fish and wildlife. It is necessary to ensure and improve the viability of Federal and State listed species by providing rearing, resident and migratory habitat in the project's 3-mile stream corridor. The project will also work to improve area habitat to benefit the migration of steelhead to high value fisheries habitat in upper watershed channel reaches.

The City of St. Helena respectfully requests \$350,000 in fiscal year 2007 funding from the Corps of Engineers Section 206 Aquatic Ecosystem Restoration Program to complete the feasibility study. This study will recommend actions not only for maximizing habitat for species by removing obstacles and hard bank stabilization, but to implement improvements to in-stream habitat such as woody debris, boulders and establishment of pools.

PREPARED STATEMENT OF THE CALIFORNIA STATE COASTAL CONSERVANCY

SUMMARY

The following testimony is in support of the California State Coastal Conservancy's fiscal year 2007 Energy and Water Development Appropriations request. The Conservancy respectfully requests needed funding for the following critical projects: \$11.7 million for the Hamilton Bel-Marín Keys Wetland Restoration Project, Army Corps of Engineers, Construction General; \$2 million for the South San Francisco Bay Shoreline Study, Army Corps of Engineers, General Investigations; \$550,000 for the Napa River Salt Marsh Restoration Project, Army Corps of Engineers, General Investigations; \$18 million for the Upper Newport Bay Ecosystem Restoration Project, Army Corps of Engineers, Construction General and \$100,000 for the Redwood Creek Restoration Project, Army Corps of Engineers, General Investigations.

CONSERVANCY BACKGROUND

The California Coastal Conservancy, established in 1976, is a State agency that uses entrepreneurial techniques to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore. We work in partnership with local governments, other public agencies, nonprofit organizations, and private landowners.

To date, the Conservancy has undertaken more than 950 projects along the 1,100 mile California coastline and around San Francisco Bay. Through such projects, the Conservancy: protects and improves coastal wetlands, streams, and watersheds; works with local communities to revitalize urban waterfronts; assists local communities in solving complex land-use problems and protects agricultural lands and supports coastal agriculture to list a few of our activities.

Since its establishment in 1976, the Coastal Conservancy has: helped build more than 300 access ways and trails, thus opening more than 80 miles of coastal and

bay lands for public use; assisted in the completion of over 100 urban waterfront projects; joined in partnership endeavors with more than 100 local land trusts and other nonprofit groups, making local community involvement an integral part of the Coastal Conservancy's work and completed projects in every coastal county and all nine San Francisco Bay Area counties. In addition, we currently have over 300 active projects that are benefiting the citizens of California.

HAMILTON BEL-MARIN KEYS WETLAND RESTORATION PROJECT

In fiscal year 2007 the California Coastal Conservancy is seeking \$11.7 million, consistent with Corps of Engineers' capability, for the continued construction of this project.

This project is of critical importance as it will provide nearly 700 acres of restored tidal and seasonal wetlands at a former Army base, in Marin County, California and provide much needed habitat for several threatened and endangered species; as well as, shorebirds and waterfowl migrating along the Pacific Flyway. In addition, this project beneficially uses dredged material from the San Francisco Bay which provides for increased navigation and maritime commerce for the Bay Area, a much needed economic stimulus for the region.

The first phase of construction, which started last year, is taking place on the former Army Airfield. Miles of levees are currently under construction, after which the main runway and taxiways will be buried under millions of cubic yards of clean dredged sediment. Subsequently, the easterly levee will be breached allowing tidal waters to once again flood the site. Later in the project, the Corps will work on the adjacent Antenna field and Bel Marin Keys V property (subject to WRDA approval) resulting in a total project area of nearly 2,500 acres. This phased approach will be used to complete the design and construction tasks in conjunction with the availability of land and dredged material.

SOUTH SAN FRANCISCO BAY SHORELINE STUDY

The Conservancy is seeking \$2,000,000 in funding in order to continue the Feasibility Study for this project. The study was initiated in fiscal year 2005 and has been ongoing, receiving \$600,000 in funds in fiscal year 2006.

This project is of national significance as it will create the largest restored wetland on the west coast of the United States and will provide extensive habitat for federally endangered species and migratory waterfowl. In addition, the project is also critical to the region as it will provide tidal and fluvial flood protection for the South San Francisco Bay Area protecting approximately 42,800 acres, 7,400 homes and businesses, and significant urban infrastructure, to include major highways, hospitals and airport facilities.

In order to continue to advance this important study it is imperative that local interests and the Federal Government work together to ensure a reliable funding stream for the project. In accordance, substantial cost-sharing has already begun among the land management agencies. The U.S. Fish and Wildlife Service contributed \$8 million toward the \$100 million acquisition of the salt ponds. The State of California provided \$72 million and the Hewlett Foundation, Packard Foundation, Moore Foundation, and Goldman Fund provided \$20 million. The foundations are providing an additional \$15 million for restoration planning and \$9 million for land management. The State of California is providing \$8 million for planning and \$6 million for land management.

NAPA RIVER SALT MARSH

For fiscal year 2007, we are seeking \$550,000 in Federal funds in order to complete Preconstruction Engineering and Design (PED) for this project which will allow construction to commence as soon as the project is authorized by Congress. Last year, \$125,000 was appropriated to the Corps of Engineers for PED activities.

The funds requested would allow the Corps of Engineers to complete design of the Napa River Salt Marsh Project. Upon authorization of the project in WRDA, the Corps will be able to construct the project. Construction of the project will provide extensive benefits to the region, to include: providing extensive wetland habitat in San Francisco Bay; the beneficial use for recycled water in the North Bay; improve open space and recreational opportunities; and resolve urgent issues associated with deterioration of the site's levee, water control structures, and water quality.

The 10,000 acre Napa River Salt Marsh was purchased by the State of California from Cargill in 1994 and is managed by the California Department of Fish and Game. The State Coastal Conservancy has been the non-Federal sponsor working with the Corps on the Feasibility Study. The Corps' Feasibility Study was completed and the Chief's Report was signed in December of 2004. Preconstruction Engineer-

ing and Design is currently taking place with construction commencing once the project is authorized in WRDA.

UPPER NEWPORT BAY ECOSYSTEM RESTORATION

In fiscal year 2007, we are seeking \$18 million in funding to complete construction and avoid cost increases and project delays.

Upper Newport Bay, one of the largest remaining tidal wetlands in Southern California, provides significant habitat for numerous federally endangered species, migratory waterfowl and shorebirds along the Pacific Flyway, and anadromous fish and other aquatic species. To ensure the long-term viability of this diverse salt marsh ecosystem as well as the stability of the region's ecosystem, the Army Corps of Engineers and the County of Orange developed the Upper Newport Bay Ecological Restoration Project, which was authorized in the Water Resources Development Act of 2000.

The project will address the habitat conversion resulting from sedimentation in the upper bay, increase the quantity and quality of wetlands habitat, improve water quality by reducing sediment inflows and algal blooms and preserve both Federal and local navigational channels, which if unaddressed will require costly maintenance dredging.

A construction contract was awarded in September 2005 and construction is underway. The available funds (Federal and non-Federal) will be expended by late summer 2006. The funding request of \$18 million for fiscal year 2007 will complete construction of this project and avoid cost increases from re-mobilizing equipment and inflation.

REDWOOD CREEK RESTORATION PROJECT

For fiscal year 2007, we are seeking \$100,000 to initiate a reconnaissance study of the flood control project.

The Redwood Creek Federal Flood Control Project was originally completed by the Corps of Engineers in 1968, however since the completion of the project very few resources have been dedicated to its management and maintenance and as a result the project is now in need of overdue maintenance to key infrastructure. Despite this fact, ecological concerns make project restoration to design standards prohibitively expensive and legally infeasible.

The \$100,000 in requested funding will facilitate a reconnaissance study of the flood control project in order to allow the Army Corps of Engineers to compile and analyze all prior hydrologic and ecological research done on the project area. In addition, the study will bring together local, State, and Federal stakeholders to understand the best opportunities available for enhancement of the flood control and natural areas in the lower river and estuary of Redwood Creek.

The project will provide numerous local and national benefits. For example, the estuary's proximity to the Redwood National and State Parks provides an excellent opportunity to enhance Federal park resources while improving flood control for the community of Orick while provide substantial rearing habitat for numerous federally endangered species.

PREPARED STATEMENT OF THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

On behalf of the Metropolitan Water Reclamation District of Greater Chicago (District), I want to thank the subcommittee for this opportunity to present our priority for fiscal year 2007 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for the Corps of Engineers priority projects of the Chicagoland Underflow Plan: the O'Hare, McCook and Thornton Reservoirs. We are requesting the subcommittee's full support for McCook and Thornton Reservoirs, as the O'Hare Reservoir has been completed. Specifically, we request the subcommittee to support the President's fiscal year 2007 budget request of \$45,000,000 from the Army Corps of Engineers Construction, General account in the fiscal year 2007 Energy and Water appropriations bill. The following text outlines these projects and the need for the requested funding.

THE CHICAGOLAND UNDERFLOW PLAN

The Chicagoland Underflow Plan (CUP) consists of three reservoirs: the O'Hare, McCook and Thornton Reservoirs. These reservoirs are a part of the Tunnel and Reservoir Plan (TARP). The O' Hare Reservoir Project was fully authorized for con-

struction in the Water Resources Development Act of 1986 (Public Law 99-662) and completed by the Corps in fiscal year 1999. This reservoir is connected to the existing O'Hare segment of the TARP. Adopted in 1972, TARP was the result of a multi-agency effort, which included officials of the State of Illinois, County of Cook, City of Chicago, and the District.

TARP was designed to address the overwhelming water pollution and flooding problems of the Chicagoland combined sewer areas. These problems stem from the fact that the capacity of the area's waterways has been overburdened over the years and has become woefully inadequate in both hydraulic and assimilative capacities. These waterways are no longer able to carry away the combined sewer overflow (CSO) discharges nor are they able to assimilate the pollution associated with these discharges. Severe basement flooding and polluted waterways (including Lake Michigan, which is the source of drinking water for millions of people) is the inevitable result. We point with pride to the fact that TARP was found to be the most cost-effective and socially and environmentally acceptable way for reducing these flooding and water pollution problems. Experience to date has reinforced such findings with respect to economics and efficiency.

The TARP plan calls for the construction of the new "underground rivers" beneath the area's waterways, connected to large CSO storage reservoirs. The "underground rivers" are tunnels up to 35 feet in diameter and 350 feet below the surface. All 109.4 miles of the tunnels have just recently been completed. The tunnels capture the majority of the pollution load by capturing all of the small storms and the first flush of the large storms.

The completed O'Hare CUP Reservoir provides 350 million gallons of storage. This Reservoir has a service area of 11.2 square miles and provides flood relief to 21,535 homes in Arlington Heights, Des Plaines and Mount Prospect. The Thornton and McCook Reservoirs are currently under construction, but until and unless they are completed, significant areas will remain unprotected. Without these reservoirs as outlets, the local drainage has nowhere to go when large storms hit the area.

Since its inception, TARP has not only abated flooding and pollution in the Chicagoland area, but has helped to preserve the integrity of Lake Michigan. In the years prior to TARP, a major storm in the area would cause local sewers and interceptors to surcharge resulting in CSO spills into the Chicagoland waterways and during major storms into Lake Michigan, the source of drinking water for the region. Since these waterways have a limited capacity, major storms have caused them to reach dangerously high levels resulting in massive sewer backups into basements and causing multi-million dollar damage to property.

Since implementation of TARP, 823 billion gallons of CSOs have been captured by TARP, that otherwise would have reached waterways. Area waterways are once again abundant with many species of aquatic life and the riverfront has been reclaimed as a natural resource for recreation and development. Closure of Lake Michigan beaches due to pollution has become a rarity. After the completion of both phases of TARP, 99 percent of the CSO pollution will be eliminated. The elimination of CSOs will reduce the quantity of discretionary dilution water needed to keep the area waterways fresh. This water can be used instead for increasing the drinking water allocation for communities in Cook, Lake, Will and DuPage counties that are now on a waiting list to receive such water. Already, these counties have received millions of gallons of additional Lake Michigan water per day, partially as a result of the reduction in the District's discretionary diversion since 1980. Additional allotments of Lake Michigan water will be made to these communities, as more water becomes available from reduced discretionary diversion.

With new allocations of lake water, many communities that previously did not get lake water are in the process of building, or have already built, water mains to accommodate their new source of drinking water. The new source of drinking water will be a substitute for the poorer quality well water previously used by these communities. Partly due to TARP, it is estimated by IDOT that between 1981 and 2020, 283 million gallons per day of Lake Michigan water would be added to domestic consumption. This translates into approximately 2 million additional people that would be able to enjoy Lake Michigan water. This new source of water supply will not only benefit its immediate receivers but will also result in an economic stimulus to the entire Chicagoland area by providing a reliable source of good quality water supply.

THE MCCOOK AND THORNTON RESERVOIRS

The McCook and Thornton Reservoirs of the Chicagoland Underflow Plan (CUP) were fully authorized for construction in the Water Resources Development Act of 1988 (Public Law 100-676). These CUP reservoirs, as previously discussed, are a part of TARP, a flood protection plan that is designed to reduce basement flooding

due to combined sewer back-ups and inadequate hydraulic capacity of the urban waterways.

These reservoirs will provide annual benefits of \$115 million. The total expected annual benefits of these projects are approximately twice as much as their total annual costs. The District, as the local sponsor, has acquired the land necessary for these projects, and will meet its cost sharing obligations under Public Law 99-662.

These projects are a very sound investment with a high rate of return. The remaining benefit/cost ratio for these two reservoirs together is 3.0. They will enhance the quality of life, safety and the peace of mind of the residents of this region. The State of Illinois has endorsed these projects and has urged their implementation. In professional circles, these projects are hailed for their farsightedness, innovation, and benefits.

Based on two successive Presidentially-declared flood disasters in our area in 1986 and again in 1987, and severe flooding in the last several years, we believe the probability of this type of flood emergency occurring before implementation of the critical flood prevention measure is quite high. As the public agency for the greater Chicagoland area responsible for water pollution control, and as our past sponsorship for flood control projects, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal of construction completion.

We have been very pleased that over the years the subcommittee has seen fit to include critical levels of funds for these important projects. We were delighted to see the \$27,500,000 in construction funds for the McCook and Thornton Reservoirs included in the Energy and Water Appropriations bill for fiscal year 2006. However, it is important that we receive a total of \$45,000,000 in construction funds in fiscal year 2007 to maintain the commitment and finish these projects. This funding is critical in order to construct the McCook Reservoir Stage 1 Grout Curtain, Stage 2 Slurry Wall, and Stage 1 Rock Wall Stabilization Contracts and to continue the engineering design of other McCook and Thornton Reservoir projects. The community has waited long enough for protection and we need these funds now to move the project in construction. We respectfully request your consideration of our request.

SUMMARY

To emphasize the area's plight, I would like to relate a flooding event that occurred when just under 4 inches of rain fell on the greater Chicagoland area. Due to the frozen ground, almost all of the rainfall entered our combined sewers, causing sewerage back-ups throughout the area. When the existing TARP tunnels filled with approximately 1.2 billion gallons of sewage and runoff, the only remaining outlets for the sewers were our waterways. Between 9:00 p.m. and 3:00 a.m., the Chicago and Calumet Rivers rose 6 feet. For the first time since 1981 we had to open the locks at all three of the waterway control points; these include Wilmette, downtown Chicago, and Calumet. Approximately 4.2 billion gallons of combined sewage and stormwater had to be released directly into Lake Michigan.

Given our large regional jurisdiction and the severity and regularity of flooding in our area, the Corps was compelled to develop a plan that would complete the uniqueness of TARP and be large enough to accommodate the area we serve. With a combined sewer area of 375 square miles, consisting of the city of Chicago and 51 contiguous suburbs, there are 1,443,000 structures within our jurisdiction, which are subject to flooding at any given time. The annual damages sustained exceed \$150 million. With the TARP CUP Reservoirs in place, these damages could be eliminated. We must consider the safety and peace of mind of the 2 million people who are affected as well as the disaster relief funds that will be saved when these projects are in place. As the public agency in the greater Chicagoland area responsible for water pollution control, and as the regional sponsor for flood control, we have an obligation to protect the health and safety of our citizens. We are asking your support in helping us achieve this necessary and important goal. It is absolutely critical that the Corps' work, which has been proceeding for a number of years, now proceeds on schedule through construction.

Therefore, we urgently request that a total of \$45,000,000 in construction funds be made available in the fiscal year 2007 Energy and Water Development Appropriations Act to continue construction of the McCook and Thornton Reservoir Projects.

Again, we thank the subcommittee for its support of this important project over the years, and we thank you in advance for your consideration of our request this year.

PREPARED STATEMENT OF THE NAPA COUNTY FLOOD CONTROL AND WATER
CONSERVATION DISTRICT

Project	Requests
NAPA RIVER FLOOD CONTROL PROJECT (Construction, General)	\$31,000,000
NAPA RIVER DREDGING PROJECT (Operation and Maintenance, General)	3,172,800

On behalf of the Napa County Flood Control and Water Conservation District (District), I want to thank the subcommittee for this opportunity to present our priorities for fiscal year 2007 and, at the same time, express our appreciation for your support of the District's projects in the years past. The District is the local sponsor for the Corps of Engineers award-winning Napa River Flood Control project and we are requesting the subcommittee's full support of this project to ensure that it stays on schedule. Specifically, we request the subcommittee to support our request of \$31,000,000 from the Army Corps of Engineers Construction, General account for the Napa River Flood Control Project. We are also seeking \$3,172,800 for the maintenance dredging of the Napa River from the Army Corps of Engineers (Operation and Maintenance, General account). The following text outlines these projects and the need for the requested funding.

NAPA RIVER FLOOD CONTROL PROJECT

Background

In the last 50 years, 19 floods have struck the Valley region, exacting a heavy toll in loss of life and property.

Cleanup and claims processing continues today from the most recent disaster, a massive flood that began in the overnight hours of December 30, 2005. This most recent event is estimated to have caused some \$70 million in damage within the City of Napa—with the vast majority of that damage in areas that will be protected by the project that is currently under construction.

The flood in 1986 killed three people and caused more than \$100 million in damage in 1986 dollars. Damages throughout Napa County totaled about \$85 million from the January and March 1995 floods. The floods resulted in 27 businesses and 843 residences damaged countrywide. Almost all of the damages from the 1986, 1995, and 1997 floods were within the project area.

Congress had authorized a flood control project in 1965, but due to expense, lack of public consensus on the design and concern about environment impacts, a project had never been realized. In mid-1995, Federal and State resource agencies reviewed the plan and gave notice to the Corps that this plan had significant regulatory hurdles to face.

The project is located in the city and county of Napa, California. The population in the city of Napa, approximately, 67,000 in 1994, is expected to exceed 77,000 this year. Excluding public facilities, the present value of damageable property within the project flood plain is well over \$500 million. The Napa River Basin, comprising 426 square miles, ranging from tidal marshes to mountainous terrain, is subject to severe winter storms and frequent flooding. In the lower reaches of the river, flood conditions are aggravated by local runoff. Floods in the Napa area have occurred in 1955, 1958, 1963, 1965, 1986 (flood of record), 1995, 1997 and 2005. In 1998, the river rose just above flood stage on three occasions, but subsided before major property damage occurred. In December of 2002, flooding occurred from the Napa Creek at the transition to the Napa River, resulting in damage to numerous residents and several businesses.

Approved Plan—Project Overview

In an effort to identify a meaningful and successful plan, a new approach emerged that looked at flood control from a broader, more comprehensive perspective. Citizens for Napa River Flood Management was formed, bringing together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters and numerous community organizations.

Through a series of public meetings and intensive debate over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The Corps of Engineers served as a partner and a resource for the group, helping to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood Management was successfully evaluated through the research, experience and state-of-the-art simulation tools developed by the Corps

and numerous international experts in the field of hydrology and other related disciplines. The success of this collaboration serves as a model for the Nation.

Acknowledging the river's natural state, the project utilizes a set of living river strategies that minimize the disruption and alteration of the river habitat, and maximizes the opportunities for environmental restoration and enhancement throughout the watershed.

The Corps has developed the revised plan, which provides 100-year protection, with the assistance of the community and its consultants into the Supplemental General Design Memorandum (SGDM) and its accompanying draft Environmental Impact Statement/Environmental Impact Report (SEIS/EIR). Construction of the project began 2 years ago. The coalition plan now memorialized in the Corps final documents includes the following engineered components: lowering of old dikes, marsh plain and flood plain terraces, oxbow dry bypass, Napa Creek flood plain terrace, upstream and downstream dry culverts along Napa Creek, new dikes, levees and flood walls, bank stabilization, pump stations and detention facilities, and bridge replacements. The benefits of the plan include reducing or elimination of loss of life, property damage, cleanup costs, community disruption due to unemployment and lost business revenue, and the need for flood insurance. In fact, the project has created an economic renaissance in Napa with new investment, schools and housing coming into a livable community on a living river. As a key feature, the plan will improve water quality, create urban wetlands and enhance wildlife habitats.

The plan will protect over 7,000 people and over 3,000 residential/commercial units from the 100-year flood event on the Napa River and its main tributary, the Napa Creek, and the project has a positive benefit-to-cost ratio under the Corps calculation. One billion dollars in damages will be saved over the useful life of the project. The Napa County Flood Control District is meeting its local cost-sharing responsibilities for the project. A countywide sales tax, along with a number of other funding options, was approved 4 years ago by a two-thirds majority of the county's voters for the local share. Napa is California's highest repetitive loss community. This plan is demonstrative of the disaster-resistant community initiative, as well, as the sustainable development initiatives of FEMA and EPA.

NAPA RIVER DREDGING PROJECT

The Napa River navigation project was authorized by the Rivers and Harbors Acts of 1888, 1935, and 1946.

The Napa River is a shallow draft navigation channel which serves light commercial and recreational traffic. The project is normally dredged by the Corps of Engineers on a 6-year cycle, with the most recent dredging being completed in 1998. This dredging is 2 years overdue and is causing not only impediment to commercial activity but posing major obstacles for construction of the project from the river. Maintenance dredging is required to restore depths required for existing traffic and in anticipation of the additional boat traffic resulting from replacement of Maxwell Bridge. The Napa County Flood Control and Water Conservation District is responsible for providing a suitable disposal site for the dredged material.

PREPARED STATEMENT OF THE CITY OF ARLINGTON, TEXAS

Mr. Chairman and members of the subcommittee, on behalf of the City of Arlington, Texas, I am pleased to submit this statement for the record in support of our request for funding in the amount of \$7.8 million in the fiscal year 2007 Appropriation Bill for Energy and Water Development to support the city's continued efforts to reduce flood damage, improve public safety, reduce erosion and sedimentation, and enhance wildlife habitat and passive recreation within the Johnson Creek corridor through Arlington, Texas.

PROJECT EXECUTIVE SUMMARY

Johnson Creek, a tributary of the Trinity River, has been the topic of extensive study by the Corps of Engineers (Corps) and the City of Arlington, Texas (city) since the early 1980's due to a history of flooding, extensive erosion and sedimentation, recreational challenges and opportunities, and important wildlife habitat.

In 1990, the Corps proposed to address flooding by planning and allocating funds to channelize and line with concrete substantial stretches of Johnson Creek. The city rejected this plan on the grounds that it provided flood relief at the expense of recreational opportunities, wildlife habitat and economic development. The city adopted in 1997 a more holistic alternative called the Johnson Creek Corridor Plan that received wide community support but was not fundable. In 1999, the Corps pre-

pared an Interim Feasibility Report and Integrated Environmental Assessment for Johnson Creek in Arlington. The document recommended a National Economic Development (NED) Plan for flood damage reduction that also addressed the city's desires for enhanced wildlife habitat and recreation in the Johnson Creek corridor. In 2000, the city adopted the Corps' 1999 plan to purchase homes within the floodplain of Johnson Creek, create linear parks with trails, and acquire and restore open space for wildlife habitat and recreation.

In 2004, subsequent to the city's contract with the Corps, the city entered into a partnership with the Dallas Cowboys to build a new football stadium adjacent to the Texas Rangers' venue and land purchased and restored as part of the 1999 plan. In 2005, the Corps' 1999 plan was amended to remove approximately 90 acres of city-owned land north of Union Pacific Railroad tracks.

During ecological investigations associated with design and master plan development of the football stadium, a number of critical issues arose that the 1999 plan (as amended in 2005) only partially addressed. The city realized that a holistic, watershed approach, in conjunction with maximizing the use of on-site best management practices (BMPs), would be required to truly address flooding, water quality, and wildlife habitat/recreation issues at Johnson Creek. The challenge was that deviations from 1999 plan, which largely has been implemented, require explicit authorization from Congress.

In March 2006, the city prepared a watershed conservation plan entitled Johnson Creek: A Vision of Conservation that modifies the 1999/2005 authorized plan. The modified plan allows the city to: (1) implement and modify, if necessary, unfinished components of the 1999/2005 plan; (2) design and construct new bank stabilization, flood control, recreation, and habitat restoration projects on public lands and easements along Johnson Creek; (3) acquire and/or receive reimbursement for an additional 90 acres of environmental lands within Trinity River and/or Rush/Village Creek floodplain; and (4) obtain reimbursement for new acquisitions, if desired, and for the use of city parks for funded Federal projects.

Total project cost to implement the modified plan is estimated at \$79,997,666, including contingency. This includes \$30,000,000 in sunk costs for completed Johnson Creek projects.

PROJECT DESCRIPTION

The modified plan is divided into a minimum of two phases as summarized below:

Phase 1 includes property between the Union Pacific railroad tracks between Division Street and Abram Street to the northerly Rangers' Pond. Phase 1 was selected for a variety of reasons as follow: (1) There is adequate open space for regional flood control; (2) the riparian corridor has high potential for restoration to improve wildlife habitat, water quality, and recreational opportunities; (3) the property is owned by the city; (4) a significant portion of existing environmental stresses, particularly erosion and sedimentation, occur within this area; (4) the city has identified this area as an entertainment district; and (5) this area includes the future Dallas Cowboys stadium, the existing Texas Rangers stadium, and a future Arlington, Texas town center. These developers have all agreed to provide matching money for the city to improve the green space within this corridor for environmental benefits listed above. Phase 1 work will provide the catalyst and inspiration for future work throughout the remainder of the watershed.

Phase 1 work is all new work and includes constructing a major flood control detention basin between the Union Pacific railroad tracks and Division Street; constructing a detention/sedimentation basin just west of the Stone Gate Mobile Park; restoring the south Rangers' pond to a stream; bank stabilization and creek restoration; modifying the north Rangers' ponds to maximize detention; installing two pedestrian bridges across Johnson Creek; providing trails and other passive recreational amenities; and enhancing remaining green space for wildlife habitat.

Phase 2 includes the Johnson Creek corridor between Union Pacific railroad tracks and Vandergriff Park, and 90 acres of environmental land within Trinity River and/or Rush/Village Creek floodplain. Within the Johnson Creek corridor, Phase 2 work will occur within three main areas. At Vandergriff and Meadowbrook Parks, proposed activities include creating a detention/sedimentation basin; restoring eroded creek banks and creek restoration; enhancing passive recreational opportunities using trails and other amenities; and enhancing wildlife habitat. The third area includes the restoration of two tributaries of Johnson Creek on either side of the main stem, between Sanford Street and Randol Mill Road. Possible acquisition of three homes between Collins Street and Park Row Avenue may also occur as part of Phase 2.

The city has long recognized that the ecological health of Johnson Creek and its contributing watershed are inextricably tied to the quality of life of its residents. In this light, the city hopes to develop a stronger link between its residents and its natural surroundings by restoring the creek, and, in doing so, revitalizing the community. Immediate local benefits include flood damage protection, habitat restoration, improved water quality and public health, increased access to Johnson Creek for passive recreation, elevated community pride, and economic redevelopment. The project complements larger, regional efforts to improve water quality and maximize the function of floodplain communities in the Trinity River watershed. Nearly all local benefits also contribute to statewide water quality, stormwater management, flood control, and environmental planning efforts by the North Central Texas Council of Government, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Corps of Engineers, Texas Parks and Wildlife, and Texas Commission on Environmental Quality.

FUNDING NEEDS

The modified plan, which includes completed components of the 1999/2005 plan and new Johnson Creek projects as described above, has a total estimated cost of \$79,997,666, of which 35 percent will be provided by the city.

For fiscal year 2007, the City of Arlington, Texas is seeking \$7.8 million from the U.S. Army Corps of Engineers Programs account through your Energy and Water Development Appropriations Subcommittee.

Thank you for your consideration of our request.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT

UPPER PENITENCIA CREEK FLOOD PROTECTION PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support a fiscal year 2007 administration budget request of \$319,000 to complete the feasibility study for the Upper Penitencia Creek Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Upper Penitencia Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. In the last 2 decades, the creek has flooded in 1980, 1982, 1983, 1986, 1995, and 1998. The January 1995 flood damaged a commercial nursery, a condominium complex, and a business park. The February 1998 flood also damaged many homes, businesses, and surface streets.

The proposed project on Upper Penitencia Creek, from the Coyote Creek confluence to Dorel Drive, will protect portions of the cities of San Jose and Milpitas. The floodplain is completely urbanized; undeveloped land is limited to a few scattered agricultural parcels and a corridor along Upper Penitencia Creek. Based on an August 2004 U.S. Army Corps of Engineers' (Corps) Economics Analysis, over 5,000 homes and businesses in the cities of San Jose and Milpitas are located in the 1 percent or 100-year flood area. Flood damages were estimated at \$455 million. Benefit-to-cost ratios for the nine project alternatives range from 2:1 to 3.1:1.

Study Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (Public Law 83-566), the Natural Resources Conservation Service (formerly the Soil Conservation Service) completed an economic feasibility study (watershed plan) for constructing flood damage reduction facilities on Upper Penitencia Creek. Following the 1990 U.S. Department of Agriculture Farm Bill, the Natural Resources Conservation Service watershed plan stalled due to the very high ratio of potential urban development flood damage compared to agricultural damage in the project area.

In January 1993, the Santa Clara Valley Water District (District) requested the Corps proceed with a reconnaissance study in the 1994 fiscal year while the Natural Resources Conservation Service plan was on hold. Funds were appropriated by Congress for fiscal year 1995 and the Corps started the reconnaissance study in October 1994. The reconnaissance report was completed in July 1995, with the recommendation to proceed with the feasibility study phase. The feasibility study, initiated in February 1998, is currently scheduled for completion in 2007.

Advance Construction.—To accelerate project implementation, the District submitted a Section 104 application to the Corps for approval to construct a portion of

the project. The application was approved in December 2000. The advance construction is for a 2,600-foot-long section of bypass channel between Coyote Creek and King Road. However, due to funding constraints at the District and concerns raised by regulatory agencies, the design was stopped and turned over to the Corps to complete.

Fiscal Year 2006 Funding.—\$628,000 was appropriated in fiscal year 2006 for the Upper Penitencia Creek Flood Protection Project for project investigation.

Fiscal Year 2006 Funding Recommendation.—It is requested that the congressional committee support the administration's fiscal year 2007 budget request of \$319,000 for the Upper Penitencia Creek Flood Protection Project to continue the Feasibility Study.

COYOTE/BERRYESSA CREEK PROJECT, BERRYESSA CREEK PROJECT ELEMENT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of \$2 million to complete with the General Reevaluation Report and update of environmental documents for the Berryessa Creek Flood Protection Project element of the Coyote/Berryessa Creek Project.

STATEMENT OF SUPPORT

Background.—The Berryessa Creek Watershed is located in northeast Santa Clara County, California, near the southern end of the San Francisco Bay. A major tributary of Coyote Creek, Berryessa Creek drains 22 square miles in the City of Milpitas and a portion of San Jose.

On average, Berryessa Creek floods once every 4 years. The most recent flood in 1998 resulted in significant damage to homes and automobiles. The proposed project on Berryessa Creek, from Calaveras Boulevard to upstream of Old Piedmont Road, will protect portions of the Cities of San Jose and Milpitas. The flood plain is largely urbanized with a mix of residential and commercial development. Based on the U.S. Army Corps of Engineers (Corps) 2005 report, a 1 percent or 100-year flood could potentially result in damages exceeding \$179 million. Benefit-to-cost ratios for the six project alternatives being evaluated range from 2:1 to 7.3:1.

Study Synopsis.—In January 1981, the Santa Clara Valley Water District (District) applied for Federal assistance for flood protection projects under Section 205 of the 1948 Flood Control Act. The Water Resources Development Act of 1990 authorized construction on the Berryessa Creek Flood Protection Project as part of a combined Coyote/Berryessa Creek Project to protect portions of the Cities of Milpitas and San Jose.

The Coyote Creek element of the project was completed in 1996. The Berryessa Creek Project element proposed in the Corps' 1987 feasibility report consisted primarily of a trapezoidal concrete lining. This was not acceptable to the local community. The Corps and the District are currently preparing a General Reevaluation Report which involves reformulating a project which is more acceptable to the local community and more environmentally sensitive. Project features will include setback levees and floodwalls to preserve sensitive areas (minimizing the use of concrete), appropriate aquatic and riparian habitat restoration and fish passage, and sediment control structures to limit turbidity and protect water quality. The project will also accommodate the City of Milpitas' adopted trail master plan. Estimated total costs of the General Reevaluation Report work are \$5 million, and should be completed in the spring of 2007.

Fiscal Year 2006 Funding.—\$375,000 was appropriated in fiscal year 2006 for the Coyote/Berryessa Creek Flood Protection Project to continue the General Reevaluation Report and environmental documents update.

Fiscal Year 2007 Funding Recommendation.—Based on the continuing threat of significant flood damage from Berryessa Creek and the need to continue with the General Reevaluation Report, it is requested that the congressional committee support an appropriation add-on of \$2 million for the Berryessa Creek Flood Protection Project element of the Coyote/Berryessa Creek Project.

UPPER GUADALUPE RIVER PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of \$8.5 million to complete final design and continue construction for the Upper Guadalupe River Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Guadalupe River is one of two major waterways flowing through a highly urbanized area of Santa Clara County, California, the heart of Silicon Valley. Historically, the river has flooded the central district and southern areas of San Jose. According to U.S. Army Corps of Engineers (Corps) 1998 feasibility study, severe flooding would result from a 100-year flooding event and potentially cause \$280 million in damages.

The probability of a large flood occurring before implementation of flood prevention measures is high. The upper Guadalupe River overflowed in March 1982, January 1983, February 1986, January 1995, March 1995, and February 1998, causing damage to several residences and businesses in the Alma Avenue and Willow Street areas. The 1995 floods in January and March, as well as in February 1998, closed Highway 87 and the parallel light-rail line, a major commute artery.

Project Synopsis.—In 1971, the Santa Clara Valley Water District (District) requested the Corps reactivate an earlier study of Guadalupe River. From 1971 to 1980, the Corps established the economic feasibility and Federal interest in the Guadalupe River only between Interstate 880 and Interstate 280. Following the 1982 and 1983 floods, the District requested that the Corps reopen its study of the upper Guadalupe River upstream of Interstate 280. The Corps completed a reconnaissance study in November 1989, which established an economically justifiable solution for flood protection in this reach. The report recommended proceeding to the feasibility study phase, which began in 1990. In January 1997, the Corps determined that the National Economic Development (NED) Plan would be a 2 percent or 50-year level of flood protection rather than the 1 percent or 100-year level. The Corps feasibility study determined the cost of the locally-preferred 100-year plan is \$153 million and the Corps NED 50-year plan is \$98 million. The District requested that the costs of providing 50-year and 100-year flood protection be analyzed during the preconstruction engineering design phase. The Corps is now proceeding with the preconstruction engineering design phase and has refined the NED Plan to address the District's comments and Endangered Species Act issues and has reevaluated the locally-preferred plan for full Federal cost-sharing. The findings were submitted to Corps Headquarters for approval in March 2004 in a Limited Reevaluation Report on the Proposed Project Modifications. This report contains an evaluation of the revised NED Plan project and the Locally-preferred Plan project, which costs \$165 million with a benefit-to-cost ratio of 1:1.42 and \$212 million with a benefit-to-cost ratio of 1:1.24, respectively. The Report was approved by the Corps in October 2005. The report recommended full cost-sharing on the Locally-preferred Plan project. Current efforts are underway to reauthorize the project at its current project cost in the Water Resources Development Act of 2005 currently being considered by Congress.

Fiscal Year 2006 Funding.—\$3.5 million was authorized in fiscal year 2006 for the Upper Guadalupe River Project to continue final design and initiate construction.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of \$8.5 million in fiscal year 2007 to complete final design and continue construction on the Upper Guadalupe River Flood Protection Project.

THOMPSON CREEK RESTORATION PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee to support a fiscal year 2007 earmark of \$400,000 within the Section 206 Aquatic Ecosystem Restoration Program to continue the Thompson Creek Restoration Project.

STATEMENT OF SUPPORT

Background.—Thompson Creek, a tributary of Coyote Creek, flows through the City of San Jose, California. Historically, the creek was a naturally-meandering stream and a component of the Coyote Creek watershed. The watershed had extensive riparian and oak woodland habitat along numerous tributary stream corridors and upland savanna. Currently, these habitat types are restricted to thin sparse pockets in the Thompson Creek restoration project area.

Significant urban development over the last 20 years has modified the runoff characteristics of the stream resulting in significant degradation of the riparian habitat and stream channel. The existing habitats along Thompson Creek, riparian forest stands, are threatened by a bank destabilization and lowering of the water table. Recent large storm events (1995, 1997, and 1998) and the subsequent wet

years in conjunction with rapid development in the upper watershed have resulted in a succession of high runoff events leading to rapid erosion.

The upstream project limits start at Aborn Road and the downstream project limit is Quimby Road where Thompson Creek has been modified as a flood protection project. The project distance is approximately 1 mile.

Status.—In February 2000, the Santa Clara Valley Water District (District) initiated discussions with U.S. Army Corps of Engineers (Corps) for a study under the Corps' Section 206 Aquatic Ecosystem Restoration Program. Based on the project merits, the Corps completed a Preliminary Restoration Plan (PRP) and subsequent Project Management Plan (PMP). After approval of the PRP the Detailed Project Report (DPR) was initiated. The DPR will provide the information necessary to develop plans and specifications for the construction of the restoration project.

Project Timeline

Request Federal assistance under Sec. 206 Aquatic Ecosystem Restoration Program—Feb 2002;

Complete Preliminary Restoration Plan—Jan 2004;

Initiate Detailed Project Report (Feasibility Study)—Jan 2005;

Final Detailed Project Report to South Pacific Division of Corps—Dec 2007;

Initiate Plans and Specifications—Jan 2008;

Project Cooperation Agreement signed—Nov 2008;

Complete Plans and Specifications—Dec 2008;

Advertise Construction Contract—Jan 2009;

Award Construction Contract—Mar 2009;

Construction Start—Apr 2009;

Complete Physical Construction—Mar 2010.

Fiscal Year 2006 Funding.—No funding was received for the project in the fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an earmark of \$400,000 within the fiscal year 2007 Section 206 Aquatic Ecosystem Restoration Program.

SOUTH SAN FRANCISCO BAY SHORELINE STUDY—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of \$2 million to continue a Feasibility Study to evaluate integrated flood protection and environmental restoration for the South San Francisco Bay Shoreline.

STATEMENT OF SUPPORT

Background.—Congressional passage of the Water Resources Development Act of 1976, originally authorized the San Francisco Bay Shoreline Study, and Santa Clara Valley Water District (District) was one of the project sponsors. In 1990, the U.S. Army Corps of Engineers (Corps) concluded that levee failure potential was low because the existing non-Federal, non-engineered levees, which were routinely maintained by Leslie Salt Company (subsequently Cargill Salt) to protect their industrial interests, had historically withstood overtopping without failure. As a result, the project was suspended until adequate economic benefits could be demonstrated.

Since the project's suspension in 1990, many changes have occurred in the South Bay. The State and Federal acquisition of approximately 15,000 acres of South Bay salt ponds was completed in early March 2003. The proposed restoration of these ponds to tidal marsh will significantly alter the hydrologic regime and levee maintenance activities, which were assumed to be constant in the Corps' 1990 study. In addition to the proposed restoration project, considerable development has occurred in the project area. Many major corporations are now located within Silicon Valley's Golden Triangle, lying within and adjacent to the tidal flood zone. Damages from a 1 percent high tide are anticipated to far exceed the \$34.5 million estimated in 1981, disrupting business operations, infrastructure, and residences. Also, historical land subsidence of up to 6 feet near Alviso, as well as the structural uncertainty of existing salt pond levees, increases the potential for tidal flooding in Santa Clara County.

In July 2002, Congress authorized a review of the Final 1992 Letter Report for the San Francisco Bay Shoreline Study. The final fiscal year 2004 appropriation for the Corps included funding for a new start Reconnaissance Study.

Project Synopsis.—At present, large areas of Santa Clara, Alameda and San Mateo Counties would be impacted by flooding during a 1 percent high tide. The proposed restoration of the South San Francisco Bay salt ponds will result in the largest restored wetland on the West Coast of the United States, and also signifi-

cantly alter the hydrologic regime adjacent to South Bay urban areas. The success of the proposed restoration is therefore dependent upon adequate tidal flood protection, and so this project provides an opportunity for multi-objective watershed planning in partnership with the California Coastal Conservancy, the lead agency on the restoration project. Project objectives include: restoration and enhancement of a diverse array of habitats, especially several special status species; tidal flood protection; and provision of wildlife-oriented public access. A Corps Reconnaissance Study was completed in September 2004 and the Feasibility Study was initiated in September 2005.

Fiscal Year 2006 Funding.—\$600,000 was appropriated in fiscal year 2006 to continue the Feasibility Study.

Fiscal Year 2007 Funding Request.—It is requested that the congressional committee support an appropriation add-on of \$2 million to continue the Feasibility Study to evaluate integrated flood protection and environmental restoration.

SAN FRANCISQUITO CREEK FLOOD DAMAGE REDUCTION AND ECOSYSTEM RESTORATION
PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support a fiscal year 2007 appropriation add-on of \$450,000 to continue a Feasibility Study of the San Francisquito Creek Watershed.

STATEMENT OF SUPPORT

Background.—The San Francisquito Creek watershed comprises 45 square miles and 70 miles of creek system. The creek mainstem flows through five cities and two counties, from Searsville Lake, belonging to Stanford University, to the San Francisco Bay at the boundary of East Palo Alto and Palo Alto. Here it forms the boundary between Santa Clara and San Mateo counties, California and separates the cities of Palo Alto from East Palo Alto and Menlo Park. The upper watershed tributaries are within the boundaries of Portola Valley and Woodside townships. The creek flows through residential and commercial properties, a biological preserve, and Stanford University campus. It interfaces with regional and State transportation systems by flowing under two freeways and the regional commuter rail system. San Francisquito Creek is one of the last natural continuous riparian corridors on the San Francisco Peninsula and home to one of the last remaining viable steelhead trout runs. The riparian habitat and urban setting offer unique opportunities for a multi-objective flood protection and ecosystem restoration project.

Flooding History.—The creek's mainstem has a flooding frequency of approximately once in 11 years. It is estimated that over \$155 million in damages could occur in Santa Clara and San Mateo counties from a 1 percent flood, affecting 4,850 home and businesses. Significant areas of Palo Alto flooded in December 1955, inundating about 1,200 acres of commercial and residential property and about 70 acres of agricultural land. April 1958 storms caused a levee failure downstream of Highway 101, flooding Palo Alto Airport, the city landfill, and the golf course up to 4 feet deep. Overflow in 1982 caused extensive damage to private and public property. The flood of record occurred on February 3, 1998, when overflow from numerous locations caused severe, record consequences with more than \$28 million in damages. More than 1,100 homes were flooded in Palo Alto, 500 people were evacuated in East Palo Alto, and the major commute and transportation artery, Highway 101, was closed.

Status.—Active citizenry are anxious to avoid a repeat of February 1998 flood. Numerous watershed-based studies have been conducted by the Corps, the Santa Clara Valley Water District, Stanford University, and the San Mateo County Flood Control District. Grassroots, consensus-based organization, called the San Francisquito Watershed Council, has united stakeholders including local and State agencies, citizens, flood victims, developers, and environmental activists for over 10 years. The San Francisquito Creek Joint Powers Authority was formed in 1999 to coordinate creek activities with five member agencies and two associate members. The Authority Board has agreed to be the local sponsor for a Corps project and received congressional authorization for a Corps reconnaissance study in May 2002. The Reconnaissance Study was completed in March 2005 and the Feasibility Study was initiated in November 2005.

Fiscal Year 2006 Funding.—\$225,000 was appropriated to San Francisquito Creek in fiscal year 2006 to initiate a Feasibility Study.

Fiscal Year 2007 Funding Recommendation.—It is requested the congressional committee support an appropriation add-on of \$450,000 to continue the Feasibility Study.

LLAGAS CREEK PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of \$618,000 for planning, design, and environmental updates for the Llagas Creek Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Llagas Creek Watershed is located in southern Santa Clara County, California, serving the communities of Gilroy, Morgan Hill and San Martin. Historically, Llagas Creek has flooded in 1937, 1955, 1958, 1962, 1963, 1969, 1982, 1986, 1996, 1997, 1998, and 2002. The 1997, 1998, and 2002 floods damaged many homes, businesses, and a recreational vehicle park located in areas of Morgan Hill and San Martin. These are areas where flood protection is proposed. Overall, the proposed project will protect the floodplain from a 1 percent flood affecting more than 1,100 residential buildings, 500 commercial buildings, and 1,300 acres of agricultural land.

Project Synopsis.—Under authority of the Watershed Protection and Flood Prevention Act (Public Law 83-566), the Natural Resources Conservation Service completed an economic feasibility study in 1982 for constructing flood damage reduction facilities on Llagas Creek. The Natural Resources Conservation Service completed construction of the last segment of the channel for Lower Llagas Creek in 1994, providing protection to the project area in Gilroy. The U.S. Army Corps of Engineers (Corps) is currently updating the 1982 environmental assessment work and the engineering design for the project areas in Morgan Hill and San Martin. The engineering design is being updated to protect and improve creek water quality and to preserve and enhance the creek's habitat, fish, and wildlife while satisfying current environmental and regulatory requirement. Significant issues include the presence of additional endangered species including red-legged frog and steelhead, listing of the area as probable critical habitat for steelhead, and more extensive riparian habitat than were considered in 1982. Project economics are currently being updated as directed by Corps Headquarters to determine continued project economic viability.

Until 1996, the Llagas Creek Project was funded through the traditional Public Law 83-566 Federal project funding agreement with the Natural Resources Conservation Service paying for channel improvements and the District paying local costs including utility relocation, bridge construction, and right of way acquisition. Due to the steady decrease in annual appropriations for the Public Law 83-566 construction program since 1990, the Llagas Creek Project had not received adequate funding from to complete the Public Law 83-566 project. To remedy this situation, the District worked with congressional representatives to transfer the construction authority from the Department of Agriculture to the Corps under the Water Resources Development Act of 1999 (Section 501). Since the transfer of responsibility to the Corps, the District has been working the Corps to complete the project. Efforts are underway to reauthorize the project at its current project cost in the Water Resources Development Act of 2005 currently being considered by Congress.

Fiscal Year 2006 Funding.—\$450,000 was appropriated in fiscal year 2006 for the Llagas Creek Flood Protection Project for planning and design.

Fiscal Year 2007 Funding Recommendation.—Based upon the high risk of flood damage from Llagas Creek, it is requested that the congressional committee support an appropriation add-on of \$618,000 in fiscal year 2007 for planning, design, and environmental updates for the Llagas Creek Project.

GUADALUPE RIVER PROJECT—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of \$5 million and an appropriation add-on of \$2.5 million, for a total of \$7.5 million to continue construction of the final phase of the Guadalupe River Flood Protection Project.

STATEMENT OF SUPPORT

Background.—The Guadalupe River is a major waterway flowing through a highly developed area of San Jose, in Santa Clara County, California. A major flood would

damage homes and businesses in the heart of Silicon Valley. Historically, the river has flooded downtown San Jose and the community of Alviso. According to the U.S. Army Corps of Engineers (Corps) 2000 Final General Reevaluation & Environmental Report for Proposed Project Modifications, estimated damages from a 1 percent flood in the urban center of San Jose are over \$576 million. The Guadalupe River overflowed in February 1986, January 1995, and March 1995, damaging homes and businesses in the St. John and Pleasant Street areas of downtown San Jose. In March 1995, heavy rains resulted in breakouts along the river that flooded approximately 300 homes and business.

Project Synopsis.—In 1971, the local community requested that the Corps reactivate its earlier study. Since 1972, substantial technical and financial assistance have been provided by the local community through the Santa Clara Valley Water District in an effort to accelerate the project's completion. To date, more than \$85.8 million in local funds have been spent on planning, design, land purchases, and construction in the Corps' project reach.

The Guadalupe River Project received authorization for construction under the Water Resources Development Act of 1986; the General Design Memorandum was completed in 1992, the local cooperative agreement was executed in March 1992, the General Design Memorandum was revised in 1993, construction of the first phase of the project was completed in August 1994, construction of the second phase was completed in August 1996. Project construction was temporarily halted due to environmental concerns.

To achieve a successful, long-term resolution to the issues of flood protection, environmental mitigation, avoidance of environmental effects, and project monitoring and maintenance costs, a multi-agency "Guadalupe Flood Control Project Collaborative" was created in 1997. A key outcome of the collaborative process was the signing of the Dispute Resolution Memorandum in 1998, which modified the project to resolve major mitigation issues and allowed the project to proceed. Energy and Water Development Appropriations Act of 2002 was signed into law on November 12, 2001. This authorized the modified Guadalupe River Project at a total cost of \$226.8 million. Subsequent to the authorization, the project cost has been raised to \$251 million. Construction of the last phase of flood protection was completed December 2004 and a completion celebration held in January 2005. The remaining construction consists of railroad bridge replacements and mitigation plantings. The overall construction of the project including the river park and the recreation elements is scheduled for completion in 2006.

Fiscal Year 2006 Funding.—\$5.6 million was authorized in fiscal year 2006 to continue Guadalupe River Project construction.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of \$2.5 million, in addition to the \$5 million in the administration's fiscal year 2007 budget request, for a total of \$7.5 million to continue construction of the final phase of the Guadalupe River Flood Protection Project.

COYOTE CREEK WATERSHED STUDY—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 appropriation add-on of \$100,000 to initiate a Reconnaissance Study of the Coyote Creek Watershed.

STATEMENT OF SUPPORT

Background.—Coyote Creek drains Santa Clara County's largest watershed, an area of more than 320 square miles encompassing most of the eastern foothills, the City of Milpitas, and portions of the cities of San Jose and Morgan Hill. It flows northward from Anderson Reservoir through more than 40 miles of rural and heavily urbanized areas and empties into south San Francisco Bay.

Prior to construction of Coyote and Anderson Reservoirs, flooding occurred in 1903, 1906, 1909, 1911, 1917, 1922, 1923, 1926, 1927, 1930 and 1931. Since 1950, the operation of the reservoirs has reduced the magnitude of flooding, although flooding is still a threat and did cause damages in 1982, 1983, 1986, 1995, and 1997. Significant areas of older homes in downtown San Jose and some major transportation corridors remain susceptible to extensive flooding. The federally-supported lower Coyote Creek Project (San Francisco Bay to Montague Expressway), which was completed in 1996, protected homes and businesses from storms which generated record runoff in the northern parts of San Jose and Milpitas.

The proposed Reconnaissance Study would evaluate the reaches upstream of the completed Federal flood protection works on lower Coyote Creek.

Objective of Study.—The objectives of the Reconnaissance Study are to investigate flood damages within the Coyote Creek Watershed; to identify potential alternatives for alleviating those damages which also minimize impacts on fishery and wildlife resources, provide opportunities for ecosystem restoration, provide for recreational opportunities; and to determine whether there is a Federal interest to proceed into the Feasibility Study Phase.

Study Authorization.—In May 2002, the House of Representatives Committee on Transportation and Infrastructure passed a resolution directing the Corps to “. . . review the report of the Chief of Engineers on Coyote and Berryessa Creeks . . . and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable in the interest of flood damage reduction, environmental restoration and protection, water conservation and supply, recreation, and other allied purposes . . .”.

Fiscal Year 2006 Administration Budget Request and Funding.—The Coyote Watershed Study was one of only three “new start” studies proposed for funding nationwide in the administration fiscal year 2006 budget request. Congress did not include funding for the study in the final fiscal year 2006 appropriations bill.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of \$100,000 to initiate a multi-purpose Reconnaissance Study within the Coyote Creek Watershed.

PREPARED STATEMENT OF THE CITY OF LOS ANGELES BOARD OF HARBOR
COMMISSIONERS AND PORT OF LOS ANGELES

Mr. Chairman and members of the subcommittee, thank you for the opportunity to submit testimony in support of full funding of the Channel Deepening Project at the Port of Los Angeles/Los Angeles Harbor; the largest container seaport in the United States and eighth largest in the world. Our testimony speaks in support of a fiscal year 2007 appropriation of \$12 million for the Federal share of continued construction of the Channel Deepening Project. Proposed funding for the Channel Deepening Project was not included in the President's fiscal year 2007 budget because the enabling legislation enacted subsequent to completion of the budget document. The Army Corps of Engineers has acknowledged its capability to fully obligate a \$12 million appropriation for the project.

The Port of Los Angeles is America's busiest seaport with record volumes of cargo moving through the 7,500-acre harbor. Its strong performance is attributed to a solid U.S. economy and the recovering Asian economies with a renewed manufacturing demand for American exports. The Port itself is a major reason for the remarkable cargo volumes. Its world-class facilities and infrastructure maximize the “one-stop shopping” concept of cargo transportation and delivery favored by most shipping lines. Ocean carriers can send the majority of their West Coast-bound cargo to Los Angeles with full confidence in the Port's modern cargo terminals and efficient train/truck intermodal network. The Channel Deepening Project is a critical Federal navigation improvement project, and is the underpinning of shipping line confidence in the Port of Los Angeles.

In the fiscal year 2006 Energy and Water Development Appropriations Act, Congress authorized an increase in the total project cost to \$222 million from \$194 million, representing a Federal share of \$72,000,000 and a local share of \$150,000,000, in accordance with the Army Corps of Engineers' revision. This revision accounts for credits for in-kind services provided by the Port and other required project modifications, including adjustments to the disposal costs for the dredged material, adjustments for construction contract changes, and project administration costs. The cost-share amounts for the Channel Deepening Project is currently under review, as well as a Supplemental EIS/EIR that will evaluate and determine the best alternative for increased disposal capacity. Upon completion of both reviews, the new cost-sharing amounts and the additional costs for disposal at the recommended site(s) will be established. The need for a Supplemental EIS/EIR has moved project completion to fiscal year 2007.

PORT NAVIGATION DEMANDS

The evolving international shipping industry prompted a collaborative effort by the Port of Los Angeles and the Corps of Engineers to implement the Channel Deepening Project in the early 1980's. With this project, the Port will deepen its main Federal channel and tributary channels by 8 feet, from -45 to -53 feet Mean Lower Low Water (MLLW), to accommodate the industry's shift to larger container vessels.

The first of these deeper-draft ships began calling at the Port of Los Angeles in August of 2004, carrying 8,000 20-foot equivalent units of containers (TEUs) and drafting at –50 feet. Currently, carriers have on order more than 155 of these larger vessels that range in size from 7,500 to 10,000 TEUs. These vessels will be delivered at a steady pace over the next 3 years, which means that ports unable to accommodate the bigger ships could be left out of the surge in trade.

In addition to greater navigability for these larger ships, deepening the Main Channel improves safety and security, shipping efficiencies and provides beneficial use of dredged material to create new land for future terminal development. Dredging for the project began in early 2003 with construction scheduled for completion in 2006. Currently, nearly 45 percent of containerized cargo entering the United States goes/travels through the San Pedro Bay port complex. The Port of Los Angeles, alone, handled a record 7.5 million TEUs in calendar year 2005, representing continued growth for any American seaport.

As we have testified before, cargo throughput for the San Pedro Bay—the Port of Los Angeles in particular—has a tremendous impact on the United States economy. We at the Port of Los Angeles cannot over-emphasize this fact. The ability of the Port to meet the spiraling demands of the steady growth in international trade is dependent upon the speedy construction of sufficiently deep navigation channels to accommodate the new container ships. These new ships provide greater efficiencies in cargo transportation, carrying one-third more cargo than most of the current fleet, and making more product inventory of imported goods available to American consumers at lower prices. In addition, exports from the United States have become more competitive in foreign markets. However, for American seaports to keep up, they must immediately make the necessary infrastructure improvements that will enable them to participate in this rapidly changing global trading arena.

Mr. Chairman, these state-of-the-art container ships represent the new competitive requirements for international container shipping efficiencies in the 21st Century, as evidenced by the increased volume of international commerce. As such, we strongly urge Congress to appropriate the \$12 million for fiscal year 2007 that will enable the Corps of Engineers to continue construction of the Channel Deepening Project, on schedule, through the project's anticipated completion in 2008.

ECONOMIC BENEFITS

The Channel Deepening Project is clearly a commercial navigation project of national economic significance and one that will yield exponential economic and environmental returns to the United States annually. The national economic benefits are evidenced by the creation of more than 1 million permanent well-paying jobs across the United States; more than \$1 billion in wages and salaries, as well as local, State and Federal sales and income tax revenues deposited into the Federal treasury. As an aside, the 7.5 million TEUs handled by the Port of Los Angeles in 2005 had a commercial value of more than \$400 billion in container cargo, with significant tax revenues accruing to the Federal Government. Similarly, according to the U.S. Customs Service, users of the Port pay approximately \$12 million a day in Customs Duties. The Los Angeles Customs District leads the Nation in total duties collected for maritime activities, collecting more than \$6 billion in 2005 alone. The return on the Federal investment at the Port of Los Angeles is real and quantifiable, and we expect it to continue to surpass the cost-benefit ratio—as determined by the Corps of Engineers' project Feasibility Study—many times over.

In closing, Federal investment in the Channel Deepening Project will ensure that the Port of Los Angeles, the Nation's busiest container seaport, remains at the forefront of the new international trade network well into this century. The Channel Deepening Project marks the second phase of the 2020 Infrastructure Development Plan that began with the Pier 400 Deep-Draft Navigation and Landfill Project. The Port of Los Angeles is moving forward with the 2020 Plan designed to meet the extraordinary infrastructure demands placed on it in the face of the continued high volume of international trade. Mr. Chairman, the Port of Los Angeles respectfully urges your subcommittee to appropriate \$12 million in fiscal year 2007 to support the U.S. Army Corps of Engineers' continued construction of the Channel Deepening project on behalf of the Port of Los Angeles.

Thank you, Mr. Chairman, for the opportunity to submit this testimony for continued congressional support of the Channel Deepening Project at the Port of Los Angeles. The Port has long valued the support of your subcommittee and its appreciation of the role of the Port of Los Angeles in contributing to this country's economic strength, and the port industry's importance to the economic vitality of the United States.

PREPARED STATEMENT OF AMERICAN RIVERS

American Rivers, on behalf of more than 500 national, regional and local organizations representing more than 5 million constituents concerned with river conservation,¹ urges the committee to provide \$2,399,145,000 for the following programs in the Energy and Water Development Appropriations bill for fiscal year 2007, including programs run by the U.S. Army Corps of Engineers, the Department of Energy and Department of Interior agencies. I request that this testimony be included in the official record.

U.S. ARMY CORPS OF ENGINEERS

Project Modification for Improvement of the Environment.—The Project Modification for Improvement of the Environment program (Section 1135) allows the U.S. Army Corps of Engineers (Corps) to restore river systems degraded by existing Corps projects. Under Section 1135, the Corps can modify existing dams and flood control projects to increase habitat for fish and wildlife, and restore areas affected by Corps projects. Non-Federal interests must provide for 25 percent of project costs, and modifications must not interfere with a project's original purpose. American Rivers urges the committee to appropriate \$25 million for the Project Modification for Improvement of the Environment program in fiscal year 2007.

Aquatic Ecosystem Restoration.—Section 206, the Aquatic Ecosystem Restoration program, allows the Corps to undertake small-scale projects to restore aquatic habitat, even in areas not directly harmed by past Corps projects. Projects carried out under this program must improve the quality of the environment, be in the public interest, and be cost-effective. American Rivers urges the committee to appropriate \$25 million for the Aquatic Ecosystem Restoration program in fiscal year 2007.

Penobscot River Restoration Project.—The Penobscot River Restoration Project is an unprecedented approach to river restoration that will reconfigure hydropower facilities and maintain energy production while opening up more than 500 miles of habitat to 10 native species of anadromous fish, improve water quality, boost wildlife and create new opportunities in communities along New England's second largest river. The two lowermost Penobscot dams, Veazie and Great Works, will be removed and a state-of-the-art fish bypass will be installed at Howland Dam. American Rivers urges the committee to appropriate \$300,000 for a reconnaissance and feasibility study on the Penobscot River Restoration Project for in fiscal year 2007.

Missouri River Fish and Wildlife Recovery Project: IA, NE, KS & MO.—The Missouri River Fish and Wildlife Recovery Project is the primary habitat restoration program for the lower Missouri River between Sioux City and St. Louis. Congress established it in 1986 to primarily help reverse the long-term impact on habitat due to the federally sponsored channelization and stabilization projects of the Pick-Sloan era. Supporting the Missouri River Fish and Wildlife Recovery Project will help reverse the decline of river wildlife by restoring historic chutes, side channels, wetlands, backwaters, and other habitat that fish and wildlife need survive. American Rivers urges the committee to appropriate \$82.8 million for the Missouri River Fish and Wildlife Recovery Project in fiscal year 2007.

Upper Mississippi Environmental Management Program.—The Upper Mississippi River Environmental Management Program (EMP), the primary habitat restoration and monitoring program on the Upper Mississippi, has a goal of restoring more than 97,000 acres of habitat; the Army Corps reports that EMP has restored or created 28,000 acres of habitat to date. American Rivers urges the committee to appropriate \$33.5 million for the Upper Mississippi River Environmental Management Program in fiscal year 2007.

Lower Mississippi River Resource Assessment.—The Lower Mississippi River Resource Assessment (LMRRA) was authorized by Congress in the Water Resources Development Act of 2000. Conducting the Lower Mississippi River Resource Assessment is the first step in consolidating into one region-wide assessment all information about the current status of aquatic habitat in the 954-mile-long Lower Mississippi River, specific habitat development/enhancement opportunities to restore the river ecosystem, and recreational needs. American Rivers urges the committee to appropriate \$1.75 million for the Lower Mississippi River Resource Assessment project in fiscal year 2007.

Flood Hazard Mitigation and Riverine Restoration (Challenge 21).—Challenge 21, a flood damage reduction program authorized in 1999, is designed to help support non-structural flood control solutions. Challenge 21 allows the Corps to relocate vul-

¹These groups and individuals have endorsed the Citizen's Agenda for Rivers which includes the "River Budget" for fiscal year 2007, a report of national funding priorities for local river conservation. For more information on the Citizen's Agenda for Rivers go to www.healthyivers.org.

nerable homes and businesses in smaller communities, restore floodplain wetlands, increase opportunities for riverside recreation, and improve quality of life in riverside communities. Challenge 21 also authorizes the Corps to work with other Federal agencies to help local governments reduce flood damages and conserve, restore, and manage riverine and floodplain resources. American Rivers urges the committee to appropriate \$50 million for the Flood Hazard Mitigation and Riverine Restoration Program in fiscal year 2007.

Lower Columbia River Ecosystem Restoration, OR & WA.—Coastal estuaries in the Pacific Northwest play a vital role in supporting healthy stocks of wild salmon and steelhead trout and other species and improving the quality of life of countless communities. The Northwest Coastal Estuary Program is designed to restore more than 16,000 acres of critical fish and wildlife habitat, augment existing monitoring efforts, and help citizens protect and manage resources by bringing together local governments, State and Federal agencies, environmental groups, ports, and citizens. American Rivers urges the committee to appropriate \$3 million for the Lower Columbia River Ecosystem Restoration project in fiscal year 2007.

The Estuary Restoration Act of 2000.—The Estuary Restoration Act of 2000 created the Estuary Habitat Restoration Council to develop a strategy for coordinating and prioritizing estuary restoration while enhancing estuary monitoring, data sharing, and research capabilities. If fully funded at its authorized level, the Act would restore 1 million acres of estuary habitat by 2010. American Rivers urges the committee to appropriate \$27.5 million for the Estuary Restoration Act of 2000 in fiscal year 2007.

Individual River Restoration Projects.—Over the past 100 years, the United States has led the world in dam building for a variety of uses, including hydropower, irrigation, flood control and water storage. While they can provide benefits to society, numerous dams have outlived their intended purpose and no longer make sense. Many are old, unsafe, and represent a threat to their river ecosystems. Several individual dam removal projects will restore natural river functions, restore access to migratory fish habitat, and provide economic benefits to neighboring communities. American Rivers urges the committee to appropriate to the Corps the following for individual river restoration projects in fiscal year 2007: (i) \$5 million for the removal of the Matilija Dam on the Ventura River in southern California; (ii) \$595,000 for the feasibility study on the removal of Rindge Dam on Malibu Creek, CA; and:

—*Kissimmee River Restoration.*—Upon completion of the Kissimmee River restoration project in 2011, over 40 square miles of river and floodplain ecosystem will be restored, including returning 43 miles of meandering river to its original course and re-creating 27,000 of the 35,000 acres of wetlands that were lost to past flood control efforts. The estimated \$494.8 million restoration project is being jointly implemented and equally cost-shared by the South Florida Water Management District and the Army Corps of Engineers. American Rivers urges the committee to appropriate \$20 million for the Kissimmee River Restoration in fiscal year 2007.

—*Everglades Ecosystem Restoration Projects.*—The 18,000-square-mile Everglades ecosystem of central and southern Florida is one of the world's most diverse and productive wetlands, but is also one of the Nation's most imperiled natural wetland ecosystems. Since 1900, more than half of the ecosystem has been drained and lost to urban and agricultural development, and the remaining marshes are criss-crossed by 1,400 miles of canals that alter natural water flows: (i) American Rivers urges the committee to appropriate \$15 million for the Everglades and South Florida Ecosystem Restoration Program in fiscal year 2007; (ii) American Rivers urges the committee to appropriate \$100 million for the Comprehensive Everglades Restoration Program in fiscal year 2007.

DEPARTMENT OF ENERGY PROGRAMS

Federal Energy Regulatory Commission in Hydropower Licensing.—The Federal Energy Regulatory Commission (FERC) is responsible for issuing licenses and permits that govern the operation and construction of non-Federal hydropower dams. Congress authorizes the amount of money FERC may spend in a given year, but that money is collected entirely from licensees through annual fees and not from tax dollars. Thus, an increase in FERC's authorized hydropower budget will be passed onto the dam owners and will not impact taxpayers or the deficit. American Rivers urges the committee to appropriate \$57.7 million for FERC hydropower relicensing in fiscal year 2007.

Energy Conservation and Energy Efficiency & Renewable Energy Resources.—Many different types of energy production, including hydropower dams and fossil fuels, affect our rivers. As we advance in energy-efficient technology and the use of

renewable energy sources, we can reduce demand and soften the impacts of energy production on rivers. Congress should take steps to eliminate our dependency on fossil fuels by supporting enhanced appropriations for DOE's energy supply and energy conservation programs. American Rivers urges the committee to appropriate \$1.2 billion and \$700 million, respectively for DOE Energy Conservation program and the Energy Efficiency & Renewable Energy Resources program in fiscal year 2007.

DEPARTMENT OF INTERIOR—BUREAU OF RECLAMATION

Savage Rapids Dam Removal and Pump Replacement (Rogue River, OR).—The Savage Rapids Dam, built in 1921, is the single largest killer of salmon on the Rogue River, including coho salmon, which are listed as threatened under the Federal Endangered Species Act. Removing Savage Rapids dam will provide an enormous boost to the Rogue River's imperiled salmon and steelhead populations. American Rivers urges the committee to appropriate \$13 million Savage Rapids Dam Removal and Pump Replacement in fiscal year 2007.

National Irrigation Water Quality Program (Departmental Irrigation Drainage Program).—The National Irrigation Water Quality Program (NIWQP) was created in 1985 in response to a waterfowl die off caused by polluted irrigation discharges. The program focuses on the effects of irrigation on rivers, lakes, and the wildlife that use them. NIWQP focuses on irrigation systems that discharge water from Federal lands, addressing the impacts that any chemicals associated with agricultural practices (including DDT, arsenic, selenium, and mercury) may have on fish and wildlife. American Rivers urges the committee to appropriate \$3 million for the National Irrigation Water Quality Program in fiscal year 2007.

Yakima River Basin Enhancement Project.—The Yakima River Basin is home to Washington's largest Native American tribe and contains one of the largest Bureau of Reclamation (Bur. Rec.) projects in the west. The various Bur. Rec. projects in the basin have depleted and polluted river flows, and water rights conflicts in this basin are legendary. This program aims to restore the river and make better use of the existing water supplies. American Rivers urges the committee to appropriate \$14 million for the Yakima River Enhancement Project in fiscal year 2007.

Deschutes Resources Conservancy.—The Deschutes Resources Conservancy (DRC) is focused on restoring streamflow and improving water quality in the Deschutes Basin of Central Oregon. The DRC acts as a catalyst, bringing together all groups working to restore the Deschutes through its restoration grants program, enterprise programs creating markets for environmental services, and community development work aimed at developing a shared vision for basinwide restoration smoothing the endangered species recovery process. American Rivers urges the committee to appropriate \$2 million for the Deschutes Resources Conservancy in fiscal year 2007.

CALIFORNIA-FEDERAL BAY DELTA PROGRAM

The California-Federal Bay Delta Program (CalFed) is a partnership between Federal and California agencies to provide a balanced, collaborative approach to the water resource demands on the San Francisco Bay and San Pablo Bay watersheds. The Ecosystem Restoration and Watershed program within CalFed works to restore and improve wildlife habitat through out the watershed, improve fish passage, integrate flood control and ecosystem restoration, and implement specific watershed restoration projects in conjunction with watershed plans. American Rivers urges the committee to appropriate \$15 million from the Bureau of Reclamation and \$5 million from the U.S. Army Corps of Engineers for the CalFed Ecosystem Restoration and Watershed Program in fiscal year 2007.

PREPARED STATEMENT OF GRANITE FALLS, MINNESOTA

Chairman Domenici and members of the Appropriations subcommittee, I appreciate the opportunity to submit this testimony on behalf of the City Council and the citizens of Granite Falls, Minnesota. We are requesting \$2 million in Federal funds for the development of the Detailed Design Report (DDR) plans and specifications, and the initial construction of critical preventative measures to protect the city from future flooding of the Minnesota River. These funds must be earmarked under Section 205, through the U.S. Army Corps of Engineers flood protection work.

This request is based on the "Supplement to the Locally Preferred Plan for Flood Damage Reduction, January, 2002" prepared on behalf of FEMA, the city, and information from the U.S. Army Corps of Engineers, Section 205 study not yet completed. The project has now been authorized in the Water Resources Development Act of 2005 for \$12 million (\$8 million Federal funds) in HR 2864, Sec. 3078 as a

Section 205 project, in accordance with the Water Resources Development Act of 1986 (100 Stat. 4184) as may be required.

The geological features of the terrain discourages the construction of diversion channels due to the granite subsurface of the soil. Most of the homes and businesses have been relocated using FEMA, State and local resources. The existing uncertified and inadequate levee system must be improved to provide adequate protection for the communities, critical pumping stations installed, and the Municipal Water Plant adjacent to the Minnesota River will require relocation.

THE CITY OF GRANITE FALLS

The City of Granite Falls is a community of slightly more than 3,000 citizens, is located in West Central Minnesota about 122 miles west of St. Paul.

The Minnesota River runs through the northern and eastern portions of the city, and is directly adjacent to the downtown area. The majority of the city's residential and commercial properties are located on the west bank of the Minnesota River in Yellow Medicine County.

Low-lying residential areas on the north end of the city, structures in the commercial business district along the river, and residences located next to the secondary river channels in the southwest part of the city are especially vulnerable to flooding.

RECENT DISASTERS

While the river represents a valuable resource to the community, it has taken a severe toll on residents and businesses during spring floods. The 1997 floods that devastated much of Western Minnesota and North Dakota did not spare Granite Falls. The Flood drove many from their homes and their downtown businesses, and resulted in millions of dollars in damages. Virtually every downtown business was flooded. More than \$850,000 was spent by the city, and another \$175,000 by the Corps of Engineers to fight the flood.

Hundreds of volunteers from Granite Falls area and the State prevented further devastation as the Minnesota River reached a peak discharge of 53,000 cubic feet per second, more than 3 million cubic feet of floodwater per minute. The rushing water was within inches of the top of the temporary dike as volunteers continued to stack sand bags. If the water had topped the dike, literally dozens of the workers lives would have been severely endangered. Total costs and damages exceeded \$5 million.

In July of 2000, the city was hit by an F-4 tornado. An F-5 tornado is the top of the scale. One person was killed, 14 badly injured, and 325 homes were either totally destroyed or severely damaged. The tornado caused more than \$26 million in damages in the community.

The following year, 2001, the city was again hit by another record flood event. Though not as severe as the 1997 flooding, damage was reduced significantly by careful city planning and preparation with Federal and State governmental units. Even so, the costs to fight the flood exceeded \$500,000 for the city and the Corps of Engineers, and much of the downtown commercial area was evacuated.

Other significant floods have occurred in 1951, 1952, 1965, 1969, and 1994. While floods have cost the community millions of dollars in extensive property damage and economic hardship, the primary concern is the significant risk to the hundreds of volunteers whose work is required building levees during flood events to protect the homes and business.

The preparation for fighting disaster costs has reached nearly \$4 million in the past 4 years. That amounts to thousands of dollars to every property owner in the city. Total flood damages and costs were more than \$30 million from 1997 through 2001.

Granite Falls has received financial support from FEMA, the Corps of Engineers, the State of Minnesota, in addition to local funds, to clean up after the disasters and to repair damages. Funds have been received to repair streets, housing rehabilitation and construction, economic development, and special services. All the help has been directed toward restoration after the floods and tornado event, but no funds have been made available to protect the city and its citizens from future flooding.

CORPS OF ENGINEERS SECTION 205 STUDY

Following the 1997 flood, the Corps of Engineers initiated a Section 205 study in May, 1998, to evaluate the extent of the flooding problem in Granite Falls, and to explore possible remedies. The study is essentially complete, but has not been released to date. The major problems of cost and funding level addressed in the 205 study have been resolved in the project authorization in HR 2864.

STUDIES CONDUCTED

The city, through a FEMA project grant under the direction of the Minnesota Department of Natural Resources MN/DNR, conducted a study of the flood problems confronting Granite Falls. The overall objective of the study was to evaluate hazards for the Granite Falls area, and to develop preliminary evaluation and prioritization for those hazards.

The Report states, "Because of the tremendous impacts of flooding on the Granite Falls community, and the relative frequency of flooding events, the report begins with an all hazard evaluation, but then focuses on flood hazards, and presents mitigation options and preliminary costs for implementing those options."

The Report evaluated each area of the community, determined the risk factors, and suggested options available to protect the area against flooding. In the conclusion of the Report, it was recommended the most economical solution to provide the necessary protection was buy out many of the properties and move them to a location outside the flood plain. This work is currently in progress.

The elevation of other areas would have to be raised, pump stations would need to be installed, some levees constructed, and the sanitary lift station and the water plant would need to be relocated. It is estimated the cost of this work would be approximately \$12 million.

The Supplement to the Locally Preferred Plan (SLPP) provides a level of flood protection for flood events up to the 500-year event. The 1998 Corps of Engineers 205 study indicates the 500-year level of protection is about the same as the 100-year flood plus 3 feet of freeboard. This level of protection is necessary as the result of a reevaluation by FEMA indicated that the current level of protection for Granite Falls was violated in both the 1997 and the 2001 flood events.

The SLPP identifies seven areas severely impacted by flooding, suggests the remedial action needed, and the cost of such work. Relocation costs are not included in this report. The city believes that with the financial assistance received from FEMA and the State of Minnesota to relocate many of the structures in low-lying areas, the remaining project needs are appropriately addressed under flood protection programs administered by the Corps of Engineers.

The Locally Preferred Plan includes the removal of about 41 structures in the lower areas of the city, including several in the commercial district. FEMA has provided the funds for 25 structure moves, leaving only 15 additional structures to be moved as a part of the project.

APPROPRIATION REQUEST

The city requests \$2 million from the committee for the purpose of the development of the Detailed Design Report, preparation of plans and specifications, and the placement of pumps stations at two of three critical locations in the city. These pump stations will provide some immediate flood relief during an emergency, but are also needed permanently as a part of the total project.

Thank you for your consideration of this request. And may I also take this opportunity to express our appreciation to the St. Paul District Office of the Army Corps of Engineers for their help and assistance during the crisis we have experienced in recent years. We will be happy to respond to any questions you may have regarding the needs of the city, and the flood protection project.

PREPARED STATEMENT OF THE CITY OF STILLWATER, MINNESOTA

Chairman Domenici and members of the Energy and Water Development Subcommittee, I thank you for the opportunity to submit this testimony requesting the \$2 million needed to begin construction on Stage 3 of the Stillwater, Minnesota flood control project. In 2001, the city experienced its seventeenth flood since 1937, immediately after the Corps completed construction work on Lock and Dam No. 3, 20 miles South of the convergence of the Mississippi River and the St. Croix River. This construction on the Mississippi River raised the water level at Stillwater by 8-10 feet.

The first two stages of the project have been completed, and Congress appropriated \$2 million in the fiscal year 2002 appropriations bill to begin construction on the critical Stage 3 of the project. When the Corps did not make the funds available for Stage 3 flood wall construction, Congress enacted Sec. 124 in the Consolidated Appropriations Act of 2004, which states,

"SEC. 124. The Secretary of the Army, acting through the Chief of Engineers, is directed to use previously appropriated funds to proceed with design and initiate construction to complete the Stillwater, Minnesota Levee and flood control project."

The Corps was not able to locate the \$2 million during fiscal year 2004, stating the funds had been redirected to another project(s). The city had obtained the necessary property from the Burlington Northern Santa Fe Railroad at a cost of \$1 million on which a portion of the floodwall will be constructed. Local funds were used to purchase this property.

In 2005, Minnesota Representatives Jim Oberstar, and Mark Kennedy, and Senators Norm Coleman and Mark Dayton contacted the Corps of Engineers regarding the Corps lack of response to the language in the fiscal year 2004 appropriations bill. These contacts resulted in a meeting in a Stillwater City Hall that included members of Congress and their staff, city officials, Brig. General Robert Crear, Commander of the Mississippi Valley Division, and the leadership from the St. Paul, MN Corps of Engineers District Office.

General Crear promised that the funds would be made available immediately to begin work on the DDR, design, plans and specifications, and the relocation of utilities for Stage 3 flood protection for the city. The Corps has begun such work as promised. While not moving as fast as the city would like, they plan to let bids and begin construction early in 2007. Most of the appropriated funds have been used by the Corps during 2005 and 2006, and additional construction funding will be necessary during fiscal year 2007. The Corps states they are awaiting approval from the House and Senate Appropriation Committees to transfer additional funds back to the Stillwater project.

The \$2 million in Federal funds requested this year, plus State and local funds will make substantial headway toward the completion of the project. It is projected that the project construction will require 2 years to complete.

PROJECT DELAY COSTLY TO THE CITY

The delay in the completion of the flood control has proven costly to the city. A number of local projects have been held back, waiting for the completion of the floodwall. The Lowell Park development, which parallels the St. Croix River, and is adjacent to the floodwall location, cannot be completed until the floodwall is constructed. The city received to grants to assist in this effort, one for \$250,000, and one for \$75,000. Both grants were aborted when the city was unable to move forward on the park improvement grants.

There has also been a delay in the inflow and infiltration (I&I) improvements to the trunk storm sewer line that is located approximately where the floodwall will be constructed. Currently, the amount of I&I flowing into the trunk sewer line that flows to the water treatment plant is costing the city more than \$10,000 each month, paying for the treatment of river water. The 7-year delay in the completion of the project has cost the city \$840,000.

Other projects delayed include the expansion of Lowell Park to the north of the levee system, delayed construction of a pedestrian pathway connecting north Main Street, Lowell Park, the St. Croix River, and downtown Stillwater. Approximately 1.5 million people visited the park and the river area last year, yet we cannot build permanent bathroom facilities until the floodwall is completed. More than 1,100 new citizens will be moving into apartments and condominiums currently under construction in downtown Stillwater. The Mayor and City Council Members had hoped the newcomers would not be greeted with major construction of the floodwall.

PROJECT OVERVIEW

The project is divided into three stages. Stage 1 included the repair and reconstruction of the existing retaining wall that extends 1,000 feet from Nelson Street on the South to the gazebo on the North end of the levee wall system. Stage 2 consists of the extension of the levee wall about 900 feet from the gazebo North around Mulberry Point.

The completion of Stage 2 was delayed by floods of 1997, costing the city and the Federal Government nearly \$500,000. After the waters subsided, it was discovered that the soil beneath the planned levee extension was very unstable, requiring a revision of plans, and the addition of another stage in the construction process.

The floodwaters of the St. Croix River did not recede until August of 1997. The construction area remained under water preventing construction work to proceed as scheduled. Lowell Park, which extends the full length of the levee wall system, several structures, and the emergency roadway which is used to provide emergency medical assistance for those using the recreational St. Croix River, and as a water source for local fire departments, were all either under water or inaccessible.

Phase I, the repair and reconstruction of the original levee wall, was completed in the summer of 1998. Work on Stage 1 was completed in late summer of 1997,

and additional soil borings were taken for Stage 2. The soil was found to be very unstable, and unable to support the levee system designed for Stage 2 of the project.

The construction of Stage 2 required remedial action, and was designated as Stage 2S. A contract was awarded for Phase 2S in November, 1998, and was completed in 1999. Phase 2 was begun in the late Fall of 1999, and the major construction work was completed at the end of the year 2000. The Design Memorandum schedule called for the construction of Stage 3 in fiscal year 2002, and to be completed in fiscal year 2003, according to the Corps schedule.

Stage 3 expands the flood protection system by constructing a berm or a 3-foot floodwall, and driving sheet piling below the surface to reduce seepage and to provide a base for the wall. The floodwall will be constructed about 125 feet inland from the riverbank. Stages 1 and 2 were critical to the protection of the fragile waterfront, and also, to prevent minor flooding on the North end of the waterfront.

Stage 3 is the component that provides the flood protection for the city. The rising elevation of the terrain, the floodwall, and minimal emergency measures are designed to provide the city with up to 100-year flood protection.

The Mayor, City Council Members, and Engineering staff all understand that Stage 3 of the flood control project is essential for the protection of life and property of the citizens, that the Stage 3 flood wall is a critical phase of the project, and that the project must be completed at the earliest possible date. The Corps acknowledged the necessity for all three stages of the project when the Design Memorandum included plans for all three stages.

The U.S. Congress directed the Secretary of the Army acting through the Chief of Engineers to proceed with the design and construction to complete the Stillwater Levee and Flood Control Project under Section 124 of the Omnibus Appropriations Act for fiscal year 2004. The city and the State of Minnesota have allocated matching funds for this work. The State has appropriated half of the non-Federal matching funds needed to complete Stage 3 of the project, as well as for Stages 1 and 2. The city has provided the remainder of the required matching funds, consequently, only the Federal share is missing to complete the project.

THE IMPACT OF LOCK AND DAM NO. 3 ON FLOODS STILLWATER

The Lock and Dam No. 3 was constructed in 1937–38 on the Mississippi River at Red Wing, Minnesota. The Lock and Dam construction raised the level of the St. Croix at Stillwater by 8 to 10 feet. It has made the City of Stillwater vulnerable during periods of high water and flooding of the St. Croix since that time. Records prove that the lock and dam construction, raising the water levels of both the Mississippi and the St. Croix River, has markedly increased the incidence of flooding at Stillwater. The culpability of the Corps is clearly evident.

The Mississippi and the St. Croix Rivers merge about 14 miles south of Stillwater. When constructing the Lock and Dam at Red Wing in 1938, the Federal officials recognized that detaining the flow of the Mississippi would back up the water in the St. Croix at Stillwater. A 1,000-foot levee wall system was constructed at Stillwater by the WPA under the supervision of the Corps to protect the fragile waterfront.

LEGISLATIVE HISTORY

The Stillwater Flood Control and Retaining Wall project first was authorized in section 363 of the Water Resources Development Act (WRDA) of 1992. An allocation of \$2.4 million was made in the Energy and Water Development Appropriations Act of 1994.

A committee report described the project in three parts—to repair, extend, and expand the levee wall system on the St. Croix River at Stillwater, Minnesota. “To repair” (Stage 1) the original existing levee wall system constructed in 1936. “To extend” (Stage 2) the original wall by approximately 900 feet to prevent the annual flooding that occurs at that location, and “To expand” (Stage 3) the system by constructing the flood wall approximately 125 feet inland from the levee wall system to protect the downtown and residential section in the flood plain.

In 1995, the Design Memorandum confirmed the cost estimate for the project was much too low, and the project was reauthorized for \$11.6 million by Congress in the 1996 WRDA legislation. In 2001, the Corps estimated the Federal cost at \$9.86 million, the non-Federal cost at \$3.29 million, and the total cost of the project to be \$13.15 million.

SUMMARY

The Mayor and Council for the City of Stillwater, Washington County Officials, the Governor and Minnesota State Legislature, and bipartisan support of Minnesota

Representatives and Senators in Congress, all recognize the significant importance of completing this project by constructing the Stage 3 flood wall on the St. Croix River at Stillwater. The Members are committed to accomplishing this work as soon as possible. It is critical to the protection of property, the preservation of our history, the respect of historic Indian sites, and the safety of our citizens and their homes and business.

We respectfully urge the Energy and Water Development Subcommittee for Appropriations to allocate the \$2 million needed to begin construction of the Stage 3 flood wall in the fiscal year 2007 Appropriations Bill. If you have questions or would like additional information regarding this project, please call on us.

PREPARED STATEMENT OF THE WESTERN COALITION OF ARID STATES

FISCAL YEAR 2007 CIVIL WORKS PROGRAM OF THE U.S. ARMY CORPS OF ENGINEERS BUDGET

The Western Coalition of Arid States (WESTCAS) is submitting this testimony regarding the President's fiscal year 2007 budget request for the U.S. Army Corps of Engineers.

WESTCAS is a coalition of Western towns and municipalities, water and wastewater agencies, irrigation districts, Native American nations, companies with water and wastewater concerns and professionals in the fields of engineering, the environmental sciences, and natural resources law and policy. WESTCAS was formed in 1992 by Western water and wastewater agencies concerned with the quality and management of water resources in the Arid West. A grass roots organization, WESTCAS is dedicated to encouraging the development of water programs and regulations which assure adequate supplies of high quality water for those living in the arid regions while protecting the environment.

The United States Army Corps of Engineering is the world's largest public engineering, design, and construction management agency. Its mission includes:

- Protecting the country's hundreds of rivers, lakes, wetlands, and thousands of miles of coastal shoreline;
- Environmental restoration and stewardship;
- Maintaining direct control of 609 dams, 257 navigational locks and 75 Hydroelectric facilities which generate 24 percent of the Nation's hydropower;
- Providing engineering expertise and emergency management abilities for homeland security; and
- Building much of the infrastructure the Army and Air Force uses to train, house, and deploy our troops.

The fiscal year 2007 budget for the Civil Works Program of the U.S. Army Corps of Engineers emphasizes three critical Corps activities. First, it funds the construction and completion of water resources projects that will provide a high rate of return on the Nation's investment in the Corps' primary mission areas of commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration.

Second, it increases funding for the Corps' regulatory program to help protect and preserve the Nation's precious waters and wetlands. Third, it reflects the administration's proactive support for the Corps' critical emergency preparedness and response mission by funding the mission in the regular budget process, and not through emergency transfers or supplemental funding. These goals are all extremely important to the arid southwest and general membership of the Western Coalition of Arid States (WESTCAS).

The fiscal year 2007 budget transmitted to Congress consists of \$5.271 billion in Direct Program funding which includes \$4.733 billion in discretionary funding and \$538 million in mandatory funding for the Civil Works program of the U.S. Army Corps of Engineers. The Civil Works program of the U.S. Army Corps of Engineers will be augmented by additional Reimbursed Program funding in the range of \$2 billion to \$3 billion.

As shown below, over 80 percent of the Civil Works program of the U.S. Army Corps of Engineers will be appropriated as Operation and Maintenance and General Construction.

Appropriation Accounts	Fiscal Year 2007 (millions)	Percentage of Total
Operation & Maintenance	\$2,258	47.7
Construction	1,555	32.9
Flood Control, Mississippi River	278	5.9
Regulatory Program	173	3.7

Appropriation Accounts	Fiscal Year 2007 (millions)	Percentage of Total
General Expenses	164	3.5
Formerly Utilized Remedial Action Program	130	2.7
General Investigations	94	2.0
Flood Control & Coastal Emergencies	81	1.7
Total	4,733	100.0

The following table illustrates that additional funding will be appropriated to Operation & Maintenance and Flood Control and Coastal Emergencies, while reducing the funding appropriation for General Construction. The reduced funding in the Construction appropriation account will result in fewer projects in the Civil Works backlog being completed. This is a significant issue that should be corrected.

Appropriation Accounts	Fiscal Year 2006 (Mil- lions)	Fiscal Year 2007 (Mil- lions)	Percentage of Total Budget Fis- cal Year 2007	Percentage Change From Prior Year
Operation & Maintenance	\$1,979	\$2,258	47.7	14.1
Construction	1,637	1,555	32.9	- 5.0
Flood Control, Mississippi River	270	278	5.9	3.0
Regulatory Program	160	173	3.7	8.1
General Expenses	162	164	3.5	1.2
Formerly Utilized Remedial Action Program	140	130	2.7	- 7.1
General Investigations	95	94	2.0	- 1.1
Flood Control & Coastal Emergencies	70	81	1.7	15.7
Total	4,513	4,733	100.0	4.9

The fiscal year 2007 Civil Works budget is a performance-based budget, which reflects a focus on the projects and activities that provide the highest net economic and environmental returns on the Nation's investment. However, the proposed budget is less than the actual U.S. Army Corps of Engineers budget in fiscal year 2001. One must ask whether our priorities are properly in focus.

The impacts caused by Hurricane Katrina could have been significantly reduced with enhanced flood control projects in place to protect the region. The Association Press has recently reported that the estimates of Hurricane Katrina's staggering toll on the Treasury are highly imprecise, costs are certain to climb to \$200 billion in the coming weeks. The final accounting could approach the more than \$300 billion spent in 4 years to fight in Afghanistan and Iraq. It would seem prudent to invest in construction of facilities to protect the Nation rather than expend hundreds of billions of dollars after a major natural disaster.

Therefore, a priority should be placed on appropriating funds for construction activities focusing on flood control and shoreline protective measures in the U.S. Army Corps of Engineers budget for fiscal year 2007. The construction projects identified in the proposed budget for flood control enhancements in the arid southwest such as the American River Watershed and Santa Ana Mainstem projects in California, the Alamogordo project in New Mexico, and the Brays Bayou project in Texas all should be funded.

Thank you for considering our request.

DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

LETTER FROM THE WYOMING WATER ASSOCIATION

Cheyenne, WY, March 6, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: On behalf of the members of the Wyoming Water Association, I am writing to request your support for an appropria-

tion in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. Consistent with the requests made by our other Upper Colorado and San Juan Recovery Programs' partners, the funding designation the Wyoming Water Association seeks is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 for activities to avoid jeopardy. The President's recommended budget for fiscal year 2007 has included this line-item amount.

Founded in 1933, the Wyoming Water Association (WWA) is a Wyoming non-profit corporation and voluntary organization of private citizens, elected officials, and representatives of business, government agencies, industry and water user groups and districts. The Association's objective is to promote the development, conservation, and utilization of the water resources of Wyoming for the benefit of Wyoming people. The WWA provides the only State-wide uniform voice representing all types of water users within the State of Wyoming and encourages citizen participation in decisions relating to multi-purpose water development, management and use.

The Wyoming Water Association is a participant in the Upper Colorado River Endangered Fish Recovery Program. That program, and its sister program within the San Juan River Basin, are ongoing partnerships among the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. The programs' objectives are to recover endangered fish species while water use and development proceeds in compliance with the Endangered Species Act. These recovery programs have become national models for collaboratively working to recover endangered species while addressing water needs to support growing western communities in the Upper Colorado River Basin region of the Intermountain West. Since 1988, these programs have facilitated ESA Section 7 consultation (without litigation) for over 1,000 Federal, tribal, State and privately managed water projects depleting approximately 2.9 million acre-feet of water per year.

The requested fiscal year 2007 appropriation will allow the Upper Colorado River Endangered Fish Program to proceed with construction of additional fish passage structures on the Green and Colorado Rivers to provide access to historic habitat upstream of existing diversion dams. The requested funding for the San Juan River Recovery Program will be used for contracts for construction and cooperative agreements with the State of New Mexico to provide and protect instream flows, fish ladders, flooded bottom land restoration, propagation facilities, stocking efforts, non-native and sportfish management activities. These programs' substantial non-Federal cost-sharing funding demonstrates the strong commitment and effective partnerships embodied in both of these successful programs. The requested Federal appropriations are critically important to these efforts moving forward.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. On behalf of the members of the Wyoming Water Association, I thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

Sincerely yours,

JOHN W. SHIELDS,
Executive Secretary.

PREPARED STATEMENT OF THE COLORADO RIVER WATER CONSERVATION DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SAN JUAN WATER COMMISSION

Chairman Domenici, the San Juan Water Commission is requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 for activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE FOUR CORNERS POWER PLANT

Chairman Domenici & Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE UPPER GUNNISON RIVER WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO WATER CONGRESS

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE PUBLIC SERVICE COMPANY OF NEW MEXICO

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT

The Central Arizona Water Conservation District (CAWCD) is pleased to present written testimony regarding the fiscal year 2007 proposed budget for the Bureau of Reclamation (Reclamation).

CAWCD is a political subdivision of the State of Arizona, governed by an elected 15-member board of directors. CAWCD was created in 1971 for the purpose of contracting with the United States to repay the reimbursable construction costs of the Central Arizona Project (CAP) authorized by the Colorado River Basin Project Act of 1968. CAWCD subsequently assumed the responsibility for operating and maintaining the Project. CAWCD has and continues to meet its repayment responsibility. In addition to a \$175 million upfront contribution from CAWCD, Reclamation has been paid \$655 million since repayment began in January 1994.

BUREAU OF RECLAMATION

CAWCD generally supports Reclamation's budget request. However, we believe that some of the priorities are misplaced. Reclamation has begun a scoping process to develop new guidelines for managing the Colorado River system and to adopt Lower Basin shortage sharing guidelines. The Seven Basin States sent a letter to the Secretary of the Interior, dated February 3, 2006, that strongly supports Reclamation's process and encourages Reclamation to take several actions to preserve, enhance and more efficiently manage the Colorado River water supply. Reclamation's Lower Colorado River Operations budget request has funds identified to complete the scoping process, but does not have sufficient funds for structures and programs to improve operational efficiency or augment supplies.

We would urge the committee to reorder priorities in this budget to focus meaningfully on important strategies for the Lower Colorado River.

LOWER COLORADO RIVER WATER CONSERVATION

Specifically, we are concerned about the lack of concrete focus on preserving storage capacity in Lake Mead by undertaking activities that would augment water availability and improve system operational efficiency.

Congress is well aware of the huge impacts that a multi-year drought has imposed on this region, and of the significant drawdown of stored water in the river's reservoirs that has resulted from this drought. A significant amount of water has been released over these years from Hoover Dam that could have been retained if effective downstream strategies had been implemented.

The construction of an off stream regulatory storage reservoir near Drop 2 of the All-American Canal has been identified as capable of saving over 60,000 acre-feet per year. The Colorado River Front Work and Levee System budget request only has

funds to complete designs, specifications, and environmental compliance activities. Were Reclamation serious about aggressively pursuing these strategies, its request for these items would be in excess of \$40 million, not the \$2.5 million requested. In order to ensure that this critical reservoir is constructed, the Seven Basin States have approved a program to make contributed funds available from Southern Nevada Water Authority (SNWA) to construct the reservoir. SNWA is prepared to contribute \$84 million over 2 years (the full estimated cost). Reclamation should be prepared with plans, administrative procedures and personnel to accept the money and initiate construction in fiscal year 2007.

YUMA DESALTING PLANT

Reclamation's budget justification concerning the Yuma Desalting Plant (YDP) continues to be disingenuous. Reclamation continues to say that the plant is in "ready reserve" status, but quickly states it would take 4 years and \$26 million to have the YDP fully operational. The October 26, 2006, report to Congress and the budget request for a pilot program to pay U.S. water delivery contractors to forebear use of water indicate the Reclamation preference for a forbearance program as opposed to salvaging the saline water by operating the YDP. A long-term program relying primarily on forbearance in the United States is not acceptable to CAWCD or any of the Lower Basin States. Decisions need to be made and resources need to be applied to bring the YDP into actual operation. Every year the YDP remains idle results in the loss of enough water to supply the annual water needs of half a million people. We urge the committee to direct Reclamation to make the Yuma Desalting Plant operational at one-third capacity and initiate regular operations no later than September 30, 2008.

COLORADO RIVER AUGMENTATION

CAWCD would like to call the committee's attention to the provisions of Sections 201, 202 and 203 of Title 1 of the Colorado River Basin Project Act of 1968 (Public Law 90-537). These provisions call for studies and actions to augment the supply of water available for distribution within the Colorado River Basin. These provisions specifically make satisfaction of the obligations of the 1944 Treaty with Mexico a national obligation and anticipate that that obligation will be met through augmentation of the Colorado River supply. The Seven Basin States have initiated a program, led and funded primarily by the Southern Nevada Water Authority, to review previous augmentation studies and evaluate new concepts. We intend to develop recommended augmentation programs to be undertaken by local, State, and Federal organizations. At the very least, Reclamation needs to commit sufficient funds to support these studies in fiscal year 2007. CAWCD suggests that at least \$200,000 be committed from Reclamation's overall appropriations for such activities as General Planning, Research and Development, or Water 2025. CAWCD urges the committee to direct Reclamation to take action and provide funding to fulfill the commitment Congress made 37 years ago to augment the water supply in the Colorado River Basin.

CAP INDIAN DISTRIBUTION SYSTEMS

We support Reclamation's request for \$18,918,000 in funding for CAP Indian Distribution Systems. A key element of the negotiated settlement embodied in the Arizona Water Settlements Act is continued Indian distribution system funding through 2009.

TUCSON RELIABILITY

We note that Reclamation has reduced its funding request for "Tucson Reliability" to a much lower level of \$200,000. We have testified before and we reiterate here that Reclamation is obligated to confer with CAWCD before proceeding with any reliability projects that would increase the CAWCD repayment obligation. That said, we believe the \$200,000 requested will be sufficient for Reclamation's planned activities in fiscal year 2007.

LOWER COLORADO RIVER OPERATIONS PROGRAM

In its fiscal year 2007 budget request, Reclamation includes \$9,603,000 in its Lower Colorado River Operations Program for the Lower Colorado River Multi-Species Conservation Program (MSCP).

The MSCP is a cost-shared program among Federal and non-Federal interests to develop a long-term plan to conserve endangered species and their habitat along the Lower Colorado River from Lake Mead to Mexico. CAWCD is one of the cost-sharing

partners. Development of this program will provide habitat for threatened and endangered species and, at the same time, allow current water and power operations to continue. CAWCD supports Reclamation's budget request for the Lower Colorado River Operations Program. This funding level is necessary to support the MSCP effort as well as environmental measures necessary to fully implement the interim surplus criteria for the Lower Colorado River. These are critical programs upon which Lower Colorado River water and power users depend.

INCREASED SECURITY COSTS FOR RECLAMATION HYDRO POWER FACILITIES

We continue to oppose the funding of post-9/11 increased security costs for Reclamation facilities through hydropower rates. The increased costs are being incurred for national security reasons, not project maintenance or operation. Details of these costs must be kept secret and cannot be disclosed like other data in Power Marketing Administration rate cases, raising serious due process issues. Other project beneficiaries are not and, in some cases, cannot be charged a fair share of these costs. Congress should make these increased national security costs nonreimbursable.

CONCLUSION

We have worked for over 3 decades with the Congress and all the succeeding administrations to make the Central Arizona Project a reality as envisioned by Congress in the 1968 Act and to ensure its major contribution to the economic welfare of the State of Arizona. Improving the ability of the Lower Colorado River system to conserve and store precious Colorado River water supplies is central to our mission and, we believe, a core directive of the 1968 Act. The lengthy drought on the Colorado River has proven the correctness of that focus and the wisdom of Congress in passing the 1968 Act. It is time to aggressively move forward to accomplish the additional tasks that have been identified. We look forward to working with the Congress, the Bureau of Reclamation and the other Federal agencies and the Basin States to get this work done.

PREPARED STATEMENT OF DENVER WATER

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

LETTER FROM THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT

Berthoud, CO, March 7, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: On behalf of the Northern Colorado Water Conservancy District, I am writing to request your support for an appropriation in fiscal year 2007 of \$4,594,000 to the U.S. Bureau of Reclamation (Reclamation) within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 for activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. I thank you for your support and request the subcommittee's assistance for fiscal year 2007 funding to ensure Reclamation's continuing financial participation in these vitally important programs.

Sincerely,

ERIC W. WILKINSON,
General Manager.

PREPARED STATEMENT OF THE PUEBLO BOARD OF WATER WORKS

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE TRI-COUNTY WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE CENTRAL UTAH WATER CONSERVANCY DISTRICT

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE SOUTHWESTERN WATER CONSERVATION DISTRICT

Chairman Domenici and Senator Reid, the Southwestern Water Conservation District was established by the Colorado General Assembly in 1941 to conserve and protect the water of the San Juan and Dolores Rivers and their tributaries in nine counties in Southwest Colorado. Therefore, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designations we are seeking are as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 for activities to avoid jeopardy to the endangered fish.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE STATE OF WYOMING

Chairman Domenici and Senator Reid, I am writing to request your support and assistance in insuring continued funding for the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. These two successful ongoing cooperative partnership programs involve the States of Colorado, New Mexico, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests. Wyoming and the other participating States request your support for an appropriation in the President's recommended budget for fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program and \$400,000 for activities to avoid jeopardy.

These recovery programs have become national models for collaboratively working to recover endangered species while meeting water use and water development demands in compliance with the Endangered Species Act, State law, and interstate compacts in the Upper Colorado River Basin region of the Intermountain West. Since 1988, these programs have facilitated ESA Section 7 consultation (without litigation) for over 1,000 Federal, tribal, State and privately managed water projects depleting approximately 2.9 million acre-feet of water per year.

The requested fiscal year 2007 appropriation will allow the Upper Colorado River Endangered Fish Program to proceed with construction of additional fish passage structures on the Colorado River to provide access to historic habitat upstream of existing diversion dams, a fish screen on a major diversion on the Green River to avoid entrainment of endangered fish, and construction of the Elkhead Project to provide low flow augmentation water on the Yampa River. The requested funding for the San Juan River Recovery Program will be used for construction of a fish screen and fish passage in critical habitat on the San Juan River.

These activities are funded pursuant to Public Law 106-392, as amended, which authorized the Federal Government to provide cost sharing for these two ongoing recovery programs' remaining capital construction projects. Raising and stocking of the endangered fish produced at program hatchery facilities, restoring floodplain habitat and fish passage, regulating and supplying instream habitat flows, installing fish screens in canal systems and controlling nonnative fish populations are key components of the programs' ongoing capital construction projects. Substantial non-Federal cost-sharing funding exceeding 50 percent for capital construction activities demonstrates the strong commitment and effective partnerships embodied in both of these successful programs.

The requested Federal appropriations are critically important to continuation of these efforts. The past support and assistance of your subcommittee has greatly facilitated the success of these multi-State, multi-agency programs. Wyoming thanks you for that support and requests the subcommittee's assistance for fiscal year 2007

funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE PERKINS COUNTY RURAL WATER SYSTEM, INC.

Perkins County Rural Water System, Inc. respectfully submits this written testimony to the Appropriations Subcommittee on Energy and Water Development for appropriations of \$6.0 million for fiscal year 2007. This project was authorized under Public Law 106-136.

Perkins County Rural Water System, (PCRWS) gained the approval of the Office of Management and Budget and the Bureau of Reclamation to proceed with construction in 2004. We have been appropriated to date \$11.71 million. The administration has zeroed out our funding for 2007. To stay on course with our project, it is very important that we get a write-in on the Senate's Appropriations Committee for \$6.0 million. Cost share for the System is 75 percent Federal, 10 percent State, and 15 percent local match. The State of South Dakota has legislated to loan PCRWS the local share for 40 years at 3 percent interest to keep costs down to the consumer.

Breakdown for the project for 2007 is as follows:

2007 BUDGET

	Amount
INCOME:	
BUREAU OF RECLAMATION	\$6,000,000
STATE OF SOUTH DAKOTA	1,500,000
MISC	350,000
TOTAL	7,850,000
EXPENSE:	
FINISH PIPE FOR 2006	450,000
NORTH DAKOTA STATE WATER COMMISSION	1,320,000
RESERVOIR	800,000
SHADEHILL AREA	1,300,000
PRAIRIE CITY AREA	925,000
BISON RURAL	925,000
BOOSTER PUMP STATION	200,000
ENGINEERING	350,000
CONSTRUCTION MISC	1,580,000
TOTAL	7,850,000

PCRWS will need \$6.0 million for each of the next 3 years to complete our project on schedule. This consists of 550 miles of various size pipe ranging from 1.5 inches to 8 inches, one booster pump station capable of moving 800 gallon per minute, a 1.0 million storage tank and telemetry to operate the whole system from one localized location.

The quality of water in northwest South Dakota is the main concern for the health and well being of the people. Although the water typically meets primary standards established by the USEPA, most of the dissolved solids are exceedingly high by the State of South Dakota standards. Water quality and quantity in Perkins County, South Dakota has been a plague for the county over many years. Droughts, both long and short term, are a fact of life for the people in this area. Being able to obtain quality water during these periods and having a back up system for other times would make life a lot easier for those rural areas. Due to the isolation from major water supplies, this may be our only chance to obtain water at an affordable cost.

On behalf of the Board of Directors of PCRWS and the people of Perkins County, South Dakota, thank you for you for allowing us to enter this testimony in subcommittee's report.

PREPARED STATEMENT OF THE GRAND VALLEY WATER USERS' ASSOCIATION

Chairman Domenici and Senator Reid, we are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within

the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

PREPARED STATEMENT OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM

Colorado River Basin Salinity Control Forum's Recommendation:

—1. Title II Program (Basinwide Program) Authorized in 1995 (Public Law 104–20)—\$17,500,000.

—2. Colorado River Water Quality Improvement Program—Administration Request.

—3. Paradox Valley Unit and Grand Valley Unit—Administration Request.

This testimony is in support of funding for the Title II Colorado River Basin Salinity Control Program. The Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. This role and the authorized program were refined and confirmed by the Congress when Public Law 104–20 was enacted. A total of \$17,500,000 is requested for fiscal year 2007 to implement the needed and authorized program. Failure to appropriate these funds will result in significant economic damage in the United States and Mexico.

In recent years, the President's requests have dropped to below \$10 million. In the judgment of the Colorado River Basin Salinity Control Forum (Forum), this amount is inappropriately low. Water quality commitments to downstream United States and Mexican water users must be honored while the Basin States continue to develop their Colorado River Compact-apportioned waters. Concentrations of salts in the river cause about \$330 million in quantified damage in the United States with significantly greater unquantified damages. Damages occur from:

- a reduction in the yield of salt sensitive crops and increased water use for leaching in the agricultural sector,
- a reduction in the useful life of galvanized water pipe systems, water heaters, faucets, garbage disposals, clothes washers, and dishwashers, and increased use of bottled water and water softeners in the household sector,
- an increase in the use of water for cooling, and the cost of water softening, and a decrease in equipment service life in the commercial sector,
- an increase in the use of water and the cost of water treatment, and an increase in sewer fees in the industrial sector,
- a decrease in the life of treatment facilities and pipelines in the utility sector,
- difficulty in meeting wastewater discharge requirements to comply with National Pollutant Discharge Elimination System permit terms and conditions, and an increase in desalination and brine disposal costs due to accumulation of salts in groundwater basins,
- increased use of imported water for leaching and the cost of desalination and brine disposal for recycled water.

For every 30 mg/l increase in salinity concentrations, there is \$75 million in additional damages in the United States. The Forum, therefore, believes implementation of the program needs to be accelerated to a level beyond that requested by the President.

The program authorized by the Congress in 1995 has proven to be very successful and very cost effective. Proposals from the public and private sector to implement salinity control strategies have far exceeded the available funding and Reclamation has a backlog of proposals. Reclamation continues to select the best and most cost-effective proposals. Funds are available for the Colorado River Basin States' cost sharing for the level of Federal funding requested by the Forum. Water quality improvements accomplished under Title II of the Colorado River Basin Salinity Control Act also benefit the quality of water delivered to Mexico. Although the United States has always met the commitments of the International Boundary & Water Commission's (Commission) Minute No. 242 to Mexico with respect to water quality, the

United States Section of the Commission is currently addressing Mexico's request for better water quality at the International Boundary.

Some of the most cost-effective salinity control opportunities occur when Reclamation can improve irrigation delivery systems at the same time that the U.S. Department of Agriculture's (USDA) program is working with landowners (irrigators) to improve the on-farm irrigation systems. Through the USDA Environmental Quality Incentives Program, adequate on-farm funds appear to be available and adequate Reclamation funds are needed to maximize the effectiveness of the effort. These salinity control efforts have secondary water conservation benefits at the point of use and downstream at the point of reuse.

OVERVIEW

In 2000, the Congress reviewed the program as authorized in 1995. Following hearings, and with administration support, the Congress passed legislation that increased the ceiling authorized for this program by \$100 million. Reclamation has received cost-effective proposals to move the program ahead and the Basin States have funds available to cost-share up-front.

The Colorado River Basin Salinity Control Program was originally authorized by the Congress in 1974. The Title I portion of the Colorado River Basin Salinity Control Act responded to commitments that the United States made, through Minute No. 242, to Mexico concerning the quality of water being delivered to Mexico below Imperial Dam. Title II of the Act established a program to respond to salinity control needs of Colorado River water users in the United States and to comply with the mandates of the then newly legislated Clean Water Act. Initially, the Secretary of the Interior and Reclamation were given the lead Federal role by the Congress. This testimony is in support of adequate funding for the Title II program.

After a decade of investigative and implementation efforts, the Basin States concluded that the Salinity Control Act needed to be amended. The Congress revised the Act in 1984. That revision, while leaving implementation of the salinity control policy with the Secretary of the Interior, also gave new salinity control responsibilities to the USDA and to the Bureau of Land Management (BLM). The Congress has charged the administration with implementing the most cost-effective program practicable (measured in dollars per ton of salt removed). The Basin States are strongly supportive of that concept as the Basin States cost share 30 percent of Federal expenditures up-front for the salinity control program, in addition to proceeding to implement salinity control activities for which they are responsible in the Colorado River Basin.

The Forum is composed of gubernatorial appointees from Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Forum has become the seven-State coordinating body for interfacing with Federal agencies and the Congress to support the implementation of the program necessary to control the salinity of the river system. In close cooperation with the Environmental Protection Agency (EPA) and pursuant to requirements of the Clean Water Act, every 3 years the Forum prepares a formal report analyzing the salinity of the Colorado River, anticipated future salinity, and the program elements necessary to keep the salinities at or below the concentrations in the river system in 1972 at Imperial Dam, and below Parker and Hoover Dams.

In setting water quality standards for the Colorado River system, the salinity concentrations at these three locations have been identified as the numeric criteria. The plan necessary for controlling salinity and reducing downstream damages has been captioned the "Plan of Implementation." The 2005 Review of water quality standards includes an updated Plan of Implementation. The level of appropriation requested in this testimony is in keeping with the agreed upon plan. If adequate funds are not appropriated, significant damages from the higher salt concentrations in the water will be more widespread in the United States and Mexico.

JUSTIFICATION

The \$17,500,000 requested by the Forum on behalf of the seven Colorado River Basin States is the level of funding necessary to proceed with Reclamation's portion of the Plan of Implementation. In July of 1995, the Congress amended the Colorado River Basin Salinity Control Act. The amended Act gives Reclamation new latitude and flexibility in seeking the most cost-effective salinity control opportunities, and it provides for utilization of proposals from project proponents, as well as more involvement from the private as well as the public sector. The result is that salt loading is being prevented at costs often less than half the cost under the previous program. The Congress recommitted its support for the revised program when it enacted Public Law 106-459. The Basin States' cost sharing up-front adds 43 cents

for every Federal dollar appropriated. The federally chartered Colorado River Basin Salinity Control Advisory Council, created by the Congress in the Salinity Control Act, has met and formally supports the requested level of funding. The Basin States urge the Energy and Water Development Subcommittee to support the funding as set forth in this testimony.

ADDITIONAL SUPPORT OF FUNDING

In addition to the funding identified above for the implementation of the most recently authorized program, the Forum urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity.

The Forum also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin States can continue to develop their Colorado River Compact-apportioned waters.

PREPARED STATEMENT OF COLORADO SPRINGS UTILITIES

We are requesting your support for an appropriation in fiscal year 2007 of \$4,594,000 to the Bureau of Reclamation within the budget line item entitled "Endangered Species Recovery Implementation Program" for the Upper Colorado Region. The President's recommended budget for fiscal year 2007 includes this line-item amount. The funding designation we seek is as follows: \$3,104,000 for construction activities for the Upper Colorado River Endangered Fish Recovery Program; \$1,090,000 for the San Juan River Basin Recovery Implementation Program; and \$400,000 activities to avoid jeopardy.

These highly successful, cooperative programs are ongoing partnerships among the States of New Mexico, Colorado, Utah and Wyoming, Indian tribes, Federal agencies, and water, power and environmental interests.

The past support and assistance of your subcommittee has greatly facilitated the success of these programs. We thank you for that support and request the subcommittee's assistance for fiscal year 2007 funding to ensure the Bureau of Reclamation's continuing financial participation in these vitally important programs.

LETTER FROM THE STATE ENGINEER'S OFFICE, STATE OF WYOMING

Cheyenne, WY, March 16, 2006.

The Honorable PETE V. DOMENICI, Chairman,
The Honorable HARRY REID, Ranking Member,
Energy and Water Development Subcommittee, Committee on Appropriations, United States Senate, 127 Dirksen Senate Office Building, Washington, DC 20510.

DEAR CHAIRMAN DOMENICI AND SENATOR REID: This letter is sent in support of fiscal year 2007 funding for the Bureau of Reclamation's Colorado River Basin Salinity Control Project—Title II Program. Congress has designated the Department of the Interior, Bureau of Reclamation (Reclamation), to be the lead agency for salinity control in the Colorado River Basin. A total of \$17,500,000 is requested for fiscal year 2007 Reclamation activities to implement authorized Colorado River Basin salinity control program programs. Failure to appropriate these funds will directly result in significant economic damages being accrued by United States and Mexican water users.

In addition to the funding identified above for the implementation of the most recently authorized program, the State of Wyoming urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operation. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and

the Grand Valley Unit will be funded primarily through the Facility Operations activity.

The State of Wyoming also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program. It is important that Reclamation have planning staff in place, properly funded, so that the progress of the program can be analyzed, coordination between various Federal and State agencies can be accomplished, and future projects and opportunities to control salinity can be properly planned to maintain the water quality standards for salinity so that the Basin States can continue to develop their Compact-apportioned waters of the Colorado River.

The Colorado River provides municipal and industrial water for 27 million people and irrigation water to nearly 4 million acres of land in the United States. The River is also the water source for some 2.3 million people and 500,000 acres in Mexico. Limitations on users' abilities to make the greatest use of this critically important water supply due to the River's high concentration of total dissolved solids (hereafter referred to as the salinity of the water) are a major concern in both the United States and Mexico. Salinity in water supplies affects agricultural, municipal, and industrial water users. While economic detriments and damages in Mexico are unquantified, the Bureau of Reclamation presently estimates salinity-related damages in the United States amount to \$330 million per year. The River's high salt content is in almost equal part due to naturally occurring geologic features that include subsurface salt formations and discharging saline springs; and the resultant concentrating effects of our users' man's storage, use and reuse of the waters of the River system. Over-application of irrigation water by agriculture is a large contributor of salt to the Colorado River as irrigation water moves below the crop root zone, seeps through saline soils and then returns to the river system.

The Environmental Protection Agency's interpretation of the 1972 amendments to the Clean Water Act required the seven Basin States to adopt water quality standards for salinity levels in the Colorado River. In light of the EPA's regulation to require water quality standards for salinity in the Basin, the Governors of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming created the Colorado River Basin Salinity Control Forum as an interstate coordination mechanism in 1973. To address these international and regionally important salinity problems, the Congress enacted the Colorado River Basin Salinity Control Act of 1974. Title I addressed the United States' obligations to Mexico to control the River's salinity to ensure the United States' water deliveries to Mexico are within the specified salinity concentration range. Title II of the Act authorized control measures upstream of Imperial Dam and directed the Secretary of the Interior to construct several salinity control projects, most of which are located in Colorado, Utah, and Wyoming.

Title II of the Act was again amended in 1995 and 2000 to direct the Bureau of Reclamation to conduct a basin-wide salinity control program. This program awards grants to non-Federal entities, on a competitive-bid basis, which initiate and carry out salinity control projects. The basin-wide program has demonstrated significantly improved cost-effectiveness, as computed on \$1 per ton of salt basis, as compared to the prior Reclamation-initiated projects. The Forum was heavily involved in the development of the 1974 Act and its subsequent amendments, and continues to actively oversee the Federal agencies' salinity control program efforts.

During the past 32 years, the seven-State Colorado River Basin Salinity Control Forum has actively assisted the Federal agencies, including the Bureau of Reclamation, in implementing this unique and important program. At its October 2006 meeting, the Forum recommended that the Bureau of Reclamation seek to have appropriated and should expend for Colorado River Basin salinity control the sum of \$17,500,000 in fiscal year 2007. We strongly believe the combined efforts of the salinity control efforts of the Bureau of Reclamation, Department of Agriculture and the Bureau of Land Management constitute one of the most successful Federal/State cooperative non-point source pollution control programs in the United States.

The State of Wyoming greatly appreciates the subcommittee's support of the Colorado River Salinity Control Program in past years. We strongly believe this important basin-wide water quality improvement program merits continued funding and support by your subcommittee. Thank you in advance for inclusion of this letter in the formal hearing record concerning fiscal year 2007 appropriations.

With best regards,

PATRICK T. TYRRELL,
Wyoming State Engineer.

LETTER FROM THE DUCHESNE COUNTY WATER CONSERVANCY DISTRICT

Roosevelt, UT, March 9, 2006.

The Honorable PETE DOMENICI,
*Subcommittee on Energy and Water Development, Senate Appropriations Committee,
 United States Senate, 127 Dirksen Senate Office Building, Washington, DC
 20510.*

DEAR MR. DOMENICI: We are writing this letter to request your support for continued funding for the Colorado River Salinity Control Title II Program. This program has greatly assisted in removal of many tons of salt from the Colorado River, but there is still a great deal of work to be completed that will require an adequate level of funding. The seven Colorado River Basin States, as well as Mexico, have greatly benefitted from this important program. For many years high concentrations of salt in the Colorado River had severely damaged agricultural production in the West as well as resulting in poor quality water being delivered to Mexico.

Great strides have been made in improving water quality in the Colorado River since the inception of this program but we strongly feel that there is still a great deal to be done. We understand that the Colorado River Basin Salinity Control Forum is requesting \$17,500,000 in funds be appropriated for this program for fiscal year 2007 and we would like to add our full support to that funding level request. We would also like to express support for the continued funding of the Natural Resource Conservation Service program, the Environmental Quality Incentive Program (EQIP) which works closely with the Salinity Program. It is very important that adequate funding levels be maintained for it also.

We request the subcommittee's assistance to ensure that the Colorado River Salinity Control Title II program and EQIP program are provided with continued adequate funding.

Sincerely,

RANDY CROZIER,
General Manager.

PREPARED STATEMENT OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California is writing in support of the following Federal programs, in priority order, under the Bureau of Reclamation and Department of Energy's budgets that we believe are deserving of your subcommittee's support during the fiscal year 2007 budget process: (1) California Bay-Delta Restoration, \$38.61 million; (2) South Delta Temporary Barriers, \$2.0 million; (3) Atlas Mill Tailings Removal in Moab, Utah, \$22.865 million; (4) Water Conservation Field Services Program, \$0.7 million; (5) Lower Colorado River Investigations Program, Brine Management Study, \$0.1 million; (6) Colorado River Front Work and Levee System, Water Management Reservoir Near the All American Canal Subactivity, \$47.541 million; (7) Yuma Area Projects, Excavating Sediments Behind Laguna Dam, \$4.654 million; (8) Colorado River Basin Salinity Control—Title II Basinwide Program; \$17.5 million.

The Metropolitan Water District of Southern California is a public agency that was created in 1928 to meet the supplemental water demands of people living in what is now portions of a six-county region of southern California. Today, the region served by Metropolitan includes approximately 18 million people living on the coastal plain between Ventura and the international boundary with Mexico.

Included in our region are more than 300 cities and unincorporated areas in the counties of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura. We provide over half of the water used in our 5,200-square-mile service area and help our members to develop local supplies through increased water conservation, recycling, storage and other resource-management programs. Metropolitan's imported water supplies come from the Colorado River via our Colorado River Aqueduct and from northern California via the State Water Project's California Aqueduct.

We are sensitive to the magnitude of these program requests during tight budget times. We are also committed to supporting these Federal programs as they are critical to meeting the challenges of water resources management and source water quality protection throughout California. These programs help to ensure long-term water security and meet the water quality requirements necessary to provide our member agencies with a safe, reliable water supply. We strongly urge your support for these funding requests.

CALIFORNIA BAY-DELTA RESTORATION

Metropolitan recommends your support of the President's fiscal year 2007 budget request of \$38.61 million in new funding from the Bureau of Reclamation (Reclamation) for funding the Federal share of the CALFED Bay-Delta program to supplement the State's cost share. The Bay-Delta system is critical to the State's economy and provides potable water to two-thirds of California homes. Included in this budget are \$10,890,000 for the Environmental Water Account; \$11,385,000 to continue storage activities related to the Shasta Enlargement Study, Sites Reservoir, Upper San Joaquin Reservoir, and Los Vaqueros enlargement, and other study and planning activities; \$5,198,000 for conveyance activities; \$2,970,000 for science based studies; \$2,970,000 for activities that will help meet water quality standards; \$1,980,000 for ecosystem restoration; and \$2,970,000 for planning and management activities. Metropolitan also supports an emphasis on funding for Delta Emergency Response actions, critical levee repairs, and CALFED habitat conservation planning activities.

SOUTH DELTA TEMPORARY BARRIERS

Metropolitan strongly recommends that \$2.0 million be added to Reclamation's budget to fund the South Delta Temporary Barriers. The Temporary Barriers project would protect water quality in the southern Sacramento-San Joaquin Delta from salt water that normally intrudes into the Delta. As flow control structures, these structures would use normal tidal action to trap fresh water behind the structures to improve water quality and circulation in the South Delta, and to provide for use of this fresh water by local agricultural agencies. These Federal funds will leverage up to \$6 million dollars in State funding.

ATLAS MINE TAILINGS CLEANUP

In cooperation with the Utah State Department of Environmental Quality, the Metropolitan Water District supports the President's budget request of \$22.865 million in fiscal year 2007 for DOE for the purposes of moving forward with the clean-up of uranium mine tailings at the Atlas Site in Moab, Utah.

WATER CONSERVATION FIELD SERVICES PROGRAM

Metropolitan is requesting a \$0.7 million augmentation of Reclamation's budget for the Water Conservation Field Services Program. This program encourages conservation of scarce water resources by providing assistance to State, agricultural, and urban water districts through training, technology transfer, technical guidance, and other related activities. The requested funding would be above Reclamation's current budget for the following programs and includes: \$400,000 for the California Friendly program for water conservation to improve water efficiency in new construction and municipal landscapes; \$100,000 for industrial water efficiency surveys to survey opportunities to conserve water in industrial water use; and \$200,000 for weather based irrigation controller and market research activities to pilot innovative ways to speed distribution and acceptance of these landscape efficiency devices.

LOWER COLORADO RIVER INVESTIGATIONS PROGRAM, BRINE MANAGEMENT STUDY

Metropolitan is requesting an additional \$0.1 million for the Lower Colorado River Investigations Program Brine Management Study in Reclamation's budget. This study continues Reclamation's work toward addressing brine concentrates. This additional money request would allow Reclamation to gather additional data with its partners, create a regional issue sensitivity analysis, and finalize and prioritize alternative solutions that manage brine concentrates in an economic and environmentally acceptable manner. The results of the study would also provide benefits for future seawater and brackish desalination projects.

COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

Water Management Reservoir Near the All-American Canal Subactivity

Reclamation has completed a multi-phased study quantifying the need and options for regulatory storage to improve Colorado River management downstream of Lake Mead. Reclamation has concluded that locating up to a 10,000 acre-foot capacity water management reservoir in Imperial County near Drop 2 of the All-American Canal would be of great benefit to the Colorado River Basin States. Benefits include conservation of reservoir system storage, improving river regulation and water delivery scheduling, providing opportunities for water conservation, facili-

tating storage and conjunctive use programs, and setting the stage for new cooperative water supply and water quality management endeavors with Mexico.

Colorado River Front Work and Levee System Project funding of \$47.541 million is needed in fiscal year 2007 in order to obtain permits, acquire land, clear and prepare the site, procure materials for construction, and for construction.

In recommending the Energy and Water Development appropriations bill provisions for fiscal year 2006, the conference committee submitted House Report 109–275 in which the conferees strongly recommended that Reclamation proceed aggressively with this work and to reflect the urgency of completing this project in future budget requests. The conferees noted that this project would provide needed improvements in river control and management, all of which are Federal responsibilities. The President's fiscal year 2007 request does not include funding needed for reservoir construction. Construction of the Drop 2 Reservoir is a high priority of the Seven Basin States. On February 3, 2006 the Basin States provided recommendations to the Secretary of the Interior on future operations of the Colorado River System. The States recommendations included creative opportunities to conserve water and improve system efficiencies, including the potential for non-Federal funding of certain efficiency improvement projects in exchange for benefits to the funding entity. Drop 2 Reservoir may provide an opportunity for such a partnership. We request that adequate Federal funds be provided in fiscal year 2007, that in concert with any non-Federal funding, will allow for the timely completion of the Drop 2 Reservoir.

YUMA AREA PROJECTS

Excavating Sediments Behind Laguna Dam

While work on a reservoir near the All-American Canal proceeds, there is an immediate need to restore limited Colorado River regulatory storage capacity downstream of Parker Dam. This can be partly accomplished by excavating sediments that have accumulated behind Laguna Dam since its completion in 1909. Reclamation funding of \$4.654 million is needed in fiscal year 2007 to complete environmental compliance and procurement and begin dredging behind Laguna Dam.

This subactivity under the Yuma Area Projects, Facilities Maintenance and Rehabilitation Activity would restore 1,100 acre-feet of storage behind Laguna Dam. Not only would this enhance the ability to regulate flows arriving at Imperial Dam, it would capture and re-regulate the water periodically released for the proper operation of Imperial Dam, benefiting both the Colorado River Basin States and Mexico.

The President's fiscal year 2007 request for the sediment control subactivity is \$1.154 million for completion of all necessary environmental documentation and engineering design. Metropolitan requests that Reclamation's funding for sediment control be augmented so as to provide a total of \$4.654 million to ensure funds are available for the work to excavate sediments from behind Laguna Dam immediately upon completion of the environmental documentation.

The construction of a new regulating reservoir, and dredging sediments behind an existing dam will critically improve water delivery efficiencies and prevent the loss of over 100,000 and up to 300,000 acre-feet per year from Colorado River reservoir storage.

COLORADO RIVER BASIN SALINITY CONTROL PROGRAM—TITLE II

We ask for your support for additional Federal funding for Reclamation's Colorado River Basin Salinity Control Program (Salinity Control Program)—Title II. We request that Congress appropriate \$17.5 million for implementation of the Title II—Basinwide Program, an increase of \$8.59 million from the President's request of \$8.91 million, to ensure water quality protection for this important source of water supply to Arizona, California, and Nevada through construction of off-farm measures to control Colorado River salinity. Concentrations of salts in the river cause hundreds of millions of dollars in damage in the United States.

We look forward to working with your office to further advance sound water management activities in California. Please contact me if I can answer any questions or provide additional information.

PREPARED STATEMENT OF THE NEW MEXICO INTERSTATE STREAM COMMISSION

SUMMARY

This statement is submitted in support of fiscal year 2007 appropriations for the Colorado River Basin salinity control program of the Department of the Interior's

Bureau of Reclamation. Congress designated the Bureau of Reclamation to be the lead agency for salinity control in the Colorado River Basin by the Colorado River Basin Salinity Control Act of 1974, and reconfirmed the Bureau of Reclamation's role by passage of Public Law 104-20. A total of \$17.5 million is requested for fiscal year 2007 to implement the authorized Colorado River salinity control program of the Bureau of Reclamation. The President's appropriation request of \$10 million is inadequate because studies have shown that the implementation of the salinity control program has fallen behind the pace needed to control damages from salinity. An appropriation of \$17.5 million for Reclamation's salinity control program is necessary to protect water quality standards for salinity and to prevent unnecessary levels of economic damage from increased salinity levels in water delivered to the Lower Basin States of the Colorado River. In addition, funding for operation and maintenance of existing projects and sufficient general investigation funding is required to identify new salinity control opportunities.

STATEMENT

The water quality standards for salinity of the Colorado River must be protected while the Basin States continue to develop their compact apportioned waters of the river. The salinity standards for the Colorado River have been adopted by the seven Basin States and approved by EPA. While currently the standards have not been exceeded, salinity control projects must be brought on-line in a timely and cost-effective manner to prevent future effects that could cause the numeric criteria to be exceeded, and would result in unnecessary damages from higher levels of salinity in the water delivered to Lower Basin States of the Colorado River.

The Colorado River Basin Salinity Control Act was authorized by Congress and signed into law in 1974. The seven Colorado River Basin States, in response to the Clean Water Act of 1972, formed the Colorado River Basin Salinity Control Forum, a body comprised of gubernatorial representatives from the seven States. The Forum was created to provide for interstate cooperation in response to the Clean Water Act and to provide the States with information necessary to comply with Sections 303(a) and (b) of the Act. The Forum has become the primary means for the Basin States to coordinate with Federal agencies and Congress to support the implementation of the salinity control program for the Colorado River Basin.

Bureau of Reclamation studies show that damages from the Colorado River to United States water users are about \$330,000,000 per year. Damages are estimated at \$75,000,000 per year for every additional increase of 30 milligrams per liter in salinity of the Colorado River. Control of salinity is necessary for the States of the Colorado River Basin, including New Mexico, to continue to develop their compact-apportioned waters of the Colorado River.

Timely appropriations for the funding of the salinity control program are essential to comply with the water quality standards for salinity, prevent unnecessary economic damages in the United States, and protect the quality of the water that the United States is obligated to deliver to Mexico. The Basin States and Federal agencies agree that increases in the salinity of the Colorado River will result in significant increases in damages to water users in the Lower Colorado River Basin. An appropriation of only the amount specified in the President's budget request is inadequate to protect the quality of water in the Colorado River and prevent unnecessary salinity damages in the States of the Lower Colorado River Basin. Although the United States has always met the water quality standard for salinity of water delivered to Mexico under Minute No. 242 of the International Boundary and Water Commission, the United States through the U.S. Section of IBWC is currently addressing a request by Mexico for better quality water. Thus, continued strong support and adequate funding of the salinity control program is required to control salinity-related damages in the United States and Mexico.

Congress amended the Colorado River Basin Salinity Control Act in July 1995 (Public Law 104-20). The salinity control program authorized by Congress by the amendment has proven to be very cost-effective, and the Basin States are standing ready with up-front cost sharing. Proposals from public and private sector entities in response to the Bureau of Reclamation's advertisement have far exceeded available funding. Basin States cost sharing funds are available for the \$17.5 million appropriation request for fiscal year 2007. The Basin States cost sharing adds 43 cents for each Federal dollar appropriated.

Public Law 106-459 gave the Bureau of Reclamation additional spending authority for the salinity control program. With the additional authority in place and significant cost sharing available from the Basin States, it is essential that the salinity control program be funded at the level requested by the Forum and Basin States to protect the water quality of the Colorado River. Some of the most cost-effective

salinity control opportunities occur when Reclamation improves irrigation delivery systems concurrently with on-farm irrigation improvements undertaken by the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP). The Basin States cost-share funding is available for both parts, on-farm and off-farm, and EQIP funding appears to be adequate to accomplish needed on-farm work. Adequate funding for Reclamation off-farm work is needed to maintain timely implementation and effectiveness of salinity control measures.

Maintenance and operation of the Bureau of Reclamation's salinity control projects and general investigations to identify new cost-effective salinity control projects are necessary for the continued success of the salinity control program. Investigation of new opportunities for salinity control are critical while the Basin States continue to develop and use their compact-apportioned waters of the Colorado River. The water quality standards for salinity and the United States water quality requirements pursuant to treaty obligations with Mexico are dependent on timely implementation of salinity control projects, adequate funding to maintain and operate existing projects, and sufficient general investigation funding to determine new cost-effective opportunities for salinity control.

Continued funding primarily through Reclamation's Facility Operation activity to support maintenance and operation the Paradox Valley Unit and the Grand Valley Unit is critically needed. General Investigation funding through Reclamation's Colorado River Water Quality Improvement Program has been lacking in the recent past, and needs to be restored to a level that supports the need for identification and study of new salinity control opportunities to maintain the levels of salinity control to meet water quality standards and control economic damages in the Lower Colorado River Basin.

I urge the Congress to appropriate \$17.5 million to the Bureau of Reclamation for the Colorado River Basin salinity control program, adequate funding for operation and maintenance of existing projects and adequate funding for general investigations to identify new salinity control opportunities. Also, I fully support testimony by the Forum's Executive Director, Jack Barnett, in request of this appropriation, and the recommendation of an appropriation of the same amount by the federally chartered Colorado River Basin Salinity Control Advisory Council.

PREPARED STATEMENT OF THE COLORADO RIVER COMMISSION OF NEVADA

As a Nevada representative of the Colorado River Basin Salinity Control Forum, the Colorado River Commission of Nevada (CRC) supports funding the fiscal year 2007 budget request for \$17,500,000 for the Bureau of Reclamation's Colorado River Basin Salinity Control Program. The CRC urges the Congress to appropriate funds requested by the administration to continue to maintain and operate salinity control facilities as they are completed and placed into long-term operations. Reclamation has completed the Paradox Valley unit which involves the collection of brines in the Paradox Valley of Colorado and the injection of those brines into a deep aquifer through an injection well. The continued operation of this project and the Grand Valley Unit will be funded primarily through the Facility Operations activity. The CRC also supports funding to allow for continued general investigation of the Salinity Control Program as requested by the administration for the Colorado River Water Quality Improvement Program.

Salinity remains one of the major problems in the Colorado River. Congress has recognized the need to confront this problem with its passage of Public Law 93-320 and Public Law 98-569. Your support of the Forum's current funding recommendations in support of the Colorado River Basin Salinity Control Program is essential to move the program forward so that the congressionally directed salinity objectives embodied in Public Law 93-320 and Public Law 98-569 are achieved.

PREPARED STATEMENT OF THE RED RIVER VALLEY ASSOCIATION

BUREAU OF RECLAMATION

Mr. Chairman and members of the committee, I am Wayne Dowd, and pleased to represent the Red River Valley Association as its President. Our organization was founded in 1925 with the express purpose of uniting the citizens of Arkansas, Louisiana, Oklahoma and Texas to develop the land and water resources of the Red River Basin.

The Resolutions contained herein were adopted by the Association during its 80th Annual Meeting in Bossier City, Louisiana on February 24, 2005, and represent the

combined concerns of the citizens of the Red River Basin Area as they pertain to the goals of the Association.

Our “western rivers” played a very important part in the development and economic success of the States west of the Mississippi River. An agency responsible for the development of those water resources has been the Bureau of Reclamation. In our four-State region they have been most active in Oklahoma.

I would like to comment on three specific requests for the future economic well-being of the citizens residing in the Red River Valley region in Oklahoma. We support the following studies and request that the Bureau of Reclamation be funded at their full fiscal year 2007 capability.

North Fork of the Red River, OK, Investigation Study.—The W.C. Austin (Altus Lake and Dam) Project in southwestern Oklahoma, is authorized to provide water for irrigation to approximately 48,000 acres of privately owned land in southwestern Oklahoma; control flooding on the North Fork of the Red River and augment municipal water supply for the City of Altus. Secondary benefits include fish and wildlife conservation and recreation opportunities. Project features include Altus Dam, four canals, a 221-mile lateral distribution system and 26 miles of drains. The Lugert-Altus Irrigation District (LAID) is responsible for operation and maintenance of the project.

Water demand in the District and region is growing which, in turn, is reducing future water availability and economic development opportunities. This proposed investigation would: (1) develop a hydrologic model of the NFRR watershed; and (2) evaluate opportunities for augmenting water availability in the project region.

We support a comprehensive evaluation of water resources in the North Fork of the Red River in Oklahoma. We sincerely appreciate your support in past appropriations.

An allocation of \$300,000 is requested for the fiscal year 2007 appropriations.

Arbuckle-Simpson Aquifer Study.—The Arbuckle-Simpson Aquifer has been designated a sole source aquifer by EPA and a large number of Oklahomans depend on its protection for their health and economic future. This is an important source of water supply for: the citizens of Ada, Sulphur, Mill Creek and Roff; the Chickasaw National Recreational Area; Chickasaw and Choctaw Tribal members; and many farmers and ranchers owning land overlying the basin. Contributions from the aquifer also provide the perennial flow for many streams and natural springs in the area. The Arbuckle-Simpson Aquifer underlines approximately 500 square miles of south-central Oklahoma.

During recent years, a number of issues have emerged which have caused concerns about the utilization and continued health of the aquifer. These concerns include issues over water use, exportation of water out of the area, impacts of groundwater development on the flows in the significant springs and rivers, and competition for water and water quality.

In order to assure the future well-being of the aquifer we support a 5-year study to include detailed assessments of: the formation’s hydrogeology, water quality and vulnerability; groundwater-surface water interactions; land use changes and related impacts; Tribal-State water rights; and overall management of the resources. We appreciate your support of this study by funding the last 3 years of the study.

We request \$1,500,000 be appropriated for fiscal year 2007 and support that the study be cost shared, 90 percent Federal and 10 percent State/Local funds.

Fort Cobb, Washita Basin Project, Water Supply Augmentation Appraisal Study.—Fort Cobb Reservoir is located at river mile 7.4 on Pond (Cobb) Creek, a tributary of the Washita River, in the Red River Basin in Caddo County, about 14 miles northwest of Anadarko. The project is authorized for flood control, municipal water supply, fish and wildlife and recreation. Construction of the project, by the Bureau of Reclamation, began in February of 1958 and was completed in March of 1959. The project is designed to provide about 11.9 MGD of water supply.

Over the past several years, the Fort Cobb Master Conservancy District has begun to experience difficulty in delivering sufficient water through their aqueduct to meet the peak demands of the service population. Although the total demand has not yet exceeded the amount contracted to the member cities and other user entities, there is an urgent need to evaluate opportunities for augmentation of the project supply to ensure the ability to meet the future needs of the member communities. The appraisal study would evaluate both surface and ground water resources in the area and look at alternatives to augment available water supply from the project.

The RRVA requests the appropriation of \$100,000 in the Bureau of Reclamation’s fiscal year 2007 budget to conduct an appraisal study of water supply augmentation options at the Fort Cobb Reservoir, Washita Basin Project.

The Red River Valley Association understands these are difficult times with our Nation's budget, so we appreciate your support for these studies in the past. We feel they are extremely important to the welfare of the citizens in Oklahoma and request that you again support these studies in fiscal year 2007.

We are always available to provide additional information and answer whatever questions you may have.

ENCLOSURE 1

RED RIVER VALLEY ASSOCIATION

The Red River Valley Association is a voluntary group of citizens bonded together to advance the economic development and future well being of the citizens of the four-State Red River Basin area in Arkansas, Louisiana, Oklahoma and Texas.

For the past 80 years, the Association has done notable work in the support and advancement of programs to develop the land and water resources of the Valley to the beneficial use of all the people. To this end, the Red River Valley Association offers its full support and assistance to the various agricultural organizations and other local governmental entities in developing the area along the Red River.

The Resolutions contained herein were adopted by the Association during its 801st Annual Meeting in Bossier City, Louisiana on February 24, 2006, and represent the combined concerns of the citizens of the Red River Basin Area as they pertain to the goals of the Association, specifically:

- Economic and Community Development;
- Environmental Restoration;
- Flood Control;
- Bank Stabilization;
- A Clean Water Supply for Municipal, Industrial and Agricultural Uses;
- Recreation; and,
- Navigation.

The Red River Valley Association is aware of the constraints on the Federal budget, and has kept those restraints in mind as these Resolutions were adopted. Therefore, and because of the far-reaching regional and national benefits addressed by the various projects covered in these Resolutions, we urge the members of Congress to review the material contained herein and give serious consideration to funding these initiatives at the levels requested.

PREPARED STATEMENT OF THE SANTA CLARA VALLEY WATER DISTRICT

CALFED BAY-DELTA PROGRAM—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of \$38.6 million and an appropriation add-on of \$61.4 million, for a total of \$100 million for California Bay-Delta Restoration.

STATEMENT OF SUPPORT

Background.—In an average year, half of Santa Clara County's water supply is imported from the San Francisco Bay/Sacramento-San Joaquin Delta estuary (Bay-Delta) watersheds through three water projects: the State Water Project, the Federal Central Valley Project, and San Francisco's Hetch Hetchy Project. In conjunction with locally-developed water, this water supply supports more than 1.7 million residents in Santa Clara County and the most important high-tech center in the world. In average-to-wet years, there is enough water to meet the county's long-term needs. In dry years, however, the county could face a water supply shortage of as much as 100,000 acre-feet per year, or roughly 20 percent of the expected demand. In addition to shortages due to hydrologic variations, the county's imported supplies have been reduced due to regulatory restrictions placed on the operation of the State and Federal water projects.

There are also water quality problems associated with using Bay-Delta water as a drinking water supply. Organic materials and pollutants discharged into the Delta, together with salt water mixing in from San Francisco Bay, have the potential to create disinfection by products that are carcinogenic and pose reproductive health concerns.

Santa Clara County's imported supplies are also vulnerable to extended outages due to catastrophic failures such as major earthquakes and flooding.

Project Synopsis.—The CALFED Bay-Delta Program is an unprecedented, cooperative effort among Federal, State, and local agencies to restore the Bay-Delta. With input from urban, agricultural, environmental, fishing, and business interests, and the general public, CALFED has developed a comprehensive, long-term plan to address ecosystem and water management issues in the Bay-Delta.

Restoring the Bay-Delta ecosystem is important not only because of its significance as an environmental resource, but also because failing to do so will stall efforts to improve water supply reliability and water quality for millions of Californians and the State's trillion-dollar economy and job base.

The passage of H.R. 2828 in 2004 reauthorized Federal participation in the CALFED Bay-Delta Program and provided \$389 million in new and expanded funding authority for selected projects, including the San Luis Reservoir Low Point Improvement Project. The San Luis Project is one of six new projects, studies or water management actions authorized to receive a share of up to \$184 million under the conveyance section of the bill. It is critical that Federal funding be provided to implement the actions authorized in the bill in the coming years.

Fiscal Year 2006 Funding.—\$37 million was appropriated for CALFED activities in fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the committee support an appropriation add-on of \$61.4 million, in addition to the \$38.6 million in the administration's fiscal year 2007 budget request, for a total of \$100 million for California Bay-Delta Restoration.

SAN JOSE AREA WATER RECLAMATION AND REUSE PROGRAM (SOUTH BAY WATER RECYCLING PROGRAM)—SANTA CLARA COUNTY, CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of \$495,000 and an appropriation add-on of \$3.61 million, for a total of \$4.1 million to fund the program's work.

STATEMENT OF SUPPORT

Background.—The San Jose Area Water Reclamation and Reuse Program, also known as the South Bay Water Recycling Program, will allow the City of San Jose and its tributary agencies of the San Jose/Santa Clara Water Pollution Control Plant to protect endangered species habitat, meet receiving water quality standards, supplement Santa Clara County water supplies, and comply with a mandate from the U.S. Environmental Protection Agency and the California Water Resources Control Board to reduce wastewater discharges into San Francisco Bay.

The Santa Clara Valley Water District (District) collaborated with the City of San Jose to build the first phase of the recycled water system by providing financial support and technical assistance, as well as coordination with local water retailers. The design, construction, construction administration, and inspection of the program's transmission pipeline and Milpitas 1A Pipeline was performed by the District under contract to the City of San Jose.

Status.—The City of San Jose is the program sponsor for Phase 1, consisting of almost 60 miles of transmission and distribution pipelines, pump stations, and reservoirs. Completed at a cost of \$140 million, Phase 1 began partial operation in October 1997. Summertime 2004 deliveries averaged 10.6 million gallons per day of recycled water. The system now serves over 517 active customers and delivers approximately 7,200 acre-feet of recycled water per year.

Phase 2 is now underway. In June 2001, San Jose approved an \$82.5 million expansion of the program. The expansion includes additional pipeline extensions into the cities of Santa Clara and Milpitas, a major pipeline extension into Coyote Valley in south San Jose, and reliability improvements of added reservoirs and pump stations. The District and the City of San Jose executed an agreement in February 2002 to cost-share on the pipeline into Coyote Valley and discuss a long-term partnership agreement on the entire system. Phase 2's near-term objective is to increase deliveries by the year 2010 to 15,000 acre-feet per year.

Funding.—In 1992, Public Law 102-575 authorized the Bureau of Reclamation to work with the City of San Jose and the District to plan, design, and build demonstration and permanent facilities for reclaiming and reusing water in the San Jose metropolitan service area. The City of San Jose reached an agreement with the Bureau of Reclamation to cover 25 percent of Phase 1's costs, or approximately \$35 million; however, Federal appropriations have not reached the authorized amount. To date, the program has received \$26.62 million of the \$35 million authorization.

Fiscal Year 2006 Funding.—\$422,000 was appropriated in fiscal year 2006.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of \$3.61 million, in addition to the \$495,000 in the administration's fiscal year 2007 budget request, for a total of \$4.1 million to fund the program's work.

SAN LUIS RESERVOIR LOW POINT IMPROVEMENT PROJECT—SANTA CLARA COUNTY,
CALIFORNIA

SUMMARY

This statement urges the committee's support for a fiscal year 2007 administration budget request of \$1.485 million and an appropriation add-on of \$5.515 million, for a total of \$8 million, to complete the Feasibility Study. This request is included in the \$100 million CALFED Bay-Delta Program appropriation request.

STATEMENT OF SUPPORT

Background.—San Luis Reservoir is one of the largest reservoirs in California, and is the largest "off-stream" water storage facility in the world. The Reservoir has a water storage capacity of more than 2 million acre-feet and is a key component of the water supply system serving the Federal Central Valley Project (CVP) and California's State Water Project. San Luis is used for seasonal storage of Sacramento-San Joaquin delta water that is delivered to the reservoir via the California Aqueduct and Delta-Mendota Canal. The San Luis Reservoir is jointly owned and operated by the U.S. Bureau of Reclamation and the California Department of Water Resources.

The San Luis Reservoir provides the sole source of CVP water supply for the San Felipe Division contractors—Santa Clara Valley Water District (District), San Benito County Water District and, in the future, Pajaro Valley Water Management Agency. When water levels in San Luis Reservoir are drawn down in the spring and summer, high water temperatures result in algae blooms at the reservoir's water surface. This condition degrades water quality, making the water difficult or impractical to treat and can preclude deliveries of water from San Luis Reservoir to San Felipe Division contractors. In order to avoid the "low point" problem, the reservoir has been operated to maintain water levels above the critical low elevation—the "low point"—resulting in approximately 200,000 acre-feet of undelivered water to south of the Delta State and Federal water users.

Project Goals and Status.—The goal of the project is to increase the operational flexibility of storage in San Luis Reservoir and ensure a high quality, reliable water supply for San Felipe Division contractors. The specific project objectives are to: (1) Increase the operational flexibility of San Luis Reservoir by increasing the effective storage; (2) Ensure that San Felipe Division contractors are able to manage their annual Central Valley Project contract allocation to meet their water supply and water quality commitments; (3) Provide opportunities for project-related environmental improvements; and (4) Provide opportunities for other project-related improvements.

Preliminary studies by the District have identified six potential alternatives to solve the problem. More funding is needed to fully explore these alternatives.

The passage of H.R. 2828 in 2004 reauthorized Federal participation in the CALFED Bay-Delta Program. The San Luis Reservoir Low Point Improvement Project was one of six new projects, studies or water management actions authorized in the bill to receive a share of up to \$184 million authorized under the conveyance section of the bill.

Fiscal Year 2006 Funding.—\$2 million was appropriated in the fiscal year 2006 CALFED appropriation.

Fiscal Year 2007 Funding Recommendation.—It is requested that the congressional committee support an appropriation add-on of \$5.515 million, in addition to the \$1.485 million in the administration's fiscal year 2007 budget request, for a total of \$8 million for the San Luis Reservoir Low Point Improvement Project. The San Luis request is included in the \$100 million CALFED Bay-Delta appropriation request.

PREPARED STATEMENT OF THE COLORADO RIVER ENERGY DISTRIBUTORS ASSOCIATION

The Colorado River Energy Distributors Association (CREDA) appreciates this opportunity to submit its views on recommendations in the President's fiscal year 2007 budget proposal that affect specific programs of the Bureau of Reclamation (Bureau) and the Western Area Power Administration (Western) in the Energy and Water Development Act of 2007. Our testimony will address two issues:

- Our request for the inclusion of language to fund additional, post 9/11 security measures at multi-purpose Federal dams from non-reimbursable appropriations; and
- Our opposition to the proposal to change interest rate calculations of the Federal Power Marketing Administrations.

CREDA is a non-profit, regional organization representing 155 consumer-owned, non-profit municipal and rural electric cooperatives, political subdivisions, irrigation and electrical districts and tribal utility authorities that purchase hydropower resources from the Colorado River Storage Project (CRSP). CRSP is a multi-purpose Federal project that provides flood control, water storage for irrigation, municipal and industrial purposes; recreation and environmental mitigation, in addition to the generation of electricity. CREDA was established in 1978 and serves as the “voice” of CRSP contractor members in dealing with resource availability and affordability issues. CREDA represents its members in dealing with the Bureau—as the owner and operator of the CRSP—and with Western—as the marketing agency for CRSP hydropower.

CREDA members serve over 4 million electric consumers in six western States: Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming. CREDA’s member utilities purchase more than 85 percent of the power produced by the CRSP.

COSTS OF INCREASED SECURITY AT FEDERAL MULTI-PURPOSE PROJECTS

Following the attacks of September 11, 2001, the Bureau of Reclamation (Bureau) embarked upon an aggressive program to enhance the security of Federal dams to protect the facilities against terrorist attacks. Based on historical precedent dating to World War II, the Bureau determined in 2002 that the costs of increased security measures should remain a non-reimbursable obligation of the Federal Government.

For fiscal year 2003, the Bureau received \$28.4 million in Energy and Water Development Appropriations Act (Public Law 108–7) and an additional \$25 million in supplemental appropriations. The Bureau also received \$28.5 million for increased security costs in the Energy and Water Development Appropriations Act of 2004 (Public Law 108–137).

Due to budget constraints, the President’s fiscal year 2005 budget directed the Bureau to recover \$12 million from entities that benefit from the multi-purpose projects. Of that amount, power customers were asked to pay an estimated 94 percent. Federal power customers objected, citing legislative precedent and the fact that the additional security measures are intended to protect all features of the Federal multi-purpose projects, not just the power features, from attack and destruction. In fact, in the event of a catastrophic failure of these projects, the power function could most likely be the purpose least impacted.

Further, power users noted that Bureau’s decision to allocate a majority of the reimbursable costs to power users was not based on any objective or risk analysis of the benefits of the security upgrades.

Congress has spoken annually regarding treatment of these costs. In report language accompanying the Energy and Water Development Appropriations Act of 2005 (Public Law 108–447), Congress recognized the dramatic increase in security needs and corresponding costs at Reclamation facilities following the September 11, 2001 attacks on our country. Congress also recognized that the Reclamation security posture “will not likely approach pre-September 11, 2001 levels for many years, if ever.” The conference committee then underscored its concern for the reimbursability of security costs by including the following directive to the Bureau: “Reclamation shall provide a report to the conference no later than May 1, 2005, with a breakout of planned reimbursable and non-reimbursable security costs by project, by region. The conference directs the Commissioner [of Reclamation] not to begin the reimbursement process until the Congress provides direct instruction to do so.”

The May 2005 Report indicated the desire of the Bureau to collect the costs of guards and patrols from project beneficiaries (primarily power) based on the existing project cost allocations for operation and maintenance. In the CRSP, this would require about 95 percent of the costs to be borne by the power customers.

In the Energy and Water Development Appropriations Act of 2006 (HR 2419, November 7, 2005), Congress directed that \$10 million of the estimated \$18 million for guards and patrols be provided by reimbursable funding. Further, Congress directed that a report to Congress be provided with further detail in 60 days.

“... the Bureau of Reclamation is expected to receive approximately \$10,000,000 in reimbursements for additional security guards and patrols, which are considered project O&M costs. The conferees agree, however, that all project beneficiaries that

benefit from an enhanced security posture at the Bureau's facilities should pay a share of the security costs. Accordingly, the Bureau is directed to provide to the House and Senate Committees on Appropriations, not later than 60 days after the enactment of this Act, a delineation of planned reimbursable security costs by project prorated by all project purposes."

The report (issued in March 2006) is similar to the previous (May 2005) report, except that it also includes "facility fortification upgrades" as a reimbursable cost. Previously the USBR had assured its stakeholders that only the costs of guards and patrols would be reimbursable. This additional obligation in essence makes EVERYTHING reimbursable at some point.

CREDA believes that the historic rationale established in the 1942 and 1943 Interior Department Appropriation Acts for treating costs of increased security at multipurpose Federal projects as non-reimbursable obligations of the Federal Government is still valid. We urge Congress to add language to the Energy and Water Development Appropriations Act of 2007 to clarify that all costs of increased security at dams owned and operated by the Bureau of Reclamation be non-reimbursable.

POWER MARKETING ADMINISTRATION INTEREST RATE PROPOSAL

The administration's fiscal year 2007 budget includes a recommendation that would raise electricity rates by changing the interest rate charged by the Southeastern Power Administration (SEPA), the Southwestern Power Administration (SWPA), and the Western Area Power Administration (WAPA) on all new investments in projects whose interest rates are not set by law. Specifically, the Department of Energy's (DOE) budget calls for the these three Power Marketing Administrations (PMAs) to set their interest rates at the level that government corporations pay to borrow funds from the Federal Government. To implement this proposal, (DOE) will amend the regulation that governs how the PMAs establish their rates and will do so administratively, without any consultation with or action from Congress.

The administration's budget proposes to increase the interest rate charged on all new investments in these hydroelectric facilities to a level that is charged government corporations—the rate that reflects the interest cost for the Federal Government to provide loans to government corporations. SEPA, SWPA and WAPA are neither government corporations nor do they borrow funds from the U.S. Treasury. All rates are set to recover the dollars appropriated by Congress for the investment in the hydroelectric facilities and to cover the cost to operate these projects. If implemented, this proposal could increase rates considerably for customers served by most of the Power Marketing Administrations.

This proposal creates a serious precedent and should be rejected, because:

- The process for implementing the proposal can be done without congressional involvement or approval;
- The proposal would arbitrarily raise revenue from electric customers for deficit reduction; and
- The proposal reverses decades of rate making precedent and accepted cost recovery practices by administrative fiat.

We urge the subcommittee to reject this proposal.

PREPARED STATEMENT OF THE FORT PECK ASSINIBOINE AND SIOUX TRIBES AND DRY PRAIRIE RURAL WATER SYSTEM

The Fort Peck Assiniboiné and Sioux Tribes and Dry Prairie Rural Water respectfully request fiscal year 2007 appropriations in the amount of \$29,797,000 for the Bureau of Reclamation from the subcommittee on Energy and Water Development. Funds will be used to construct critical elements of the Fort Peck Reservation Rural Water System, Montana, (Public Law 106–382, October 27, 2000). The amount requested is based on need to build critical project elements and is well within capability to spend the requested funds as set out below:

FISCAL YEAR 2007 WORK PLAN—FORT PECK RESERVATION RURAL WATER SYSTEM (PUBLIC LAW 106–382)

	Amount
Fort Peck Tribes:	
Work Plan (100 Percent Federal)	\$15,626,000

FISCAL YEAR 2007 WORK PLAN—FORT PECK RESERVATION RURAL WATER SYSTEM (PUBLIC LAW 106-382)—Continued

	Amount
Water Treatment Plant Pipelines:	
Poplar to Big Muddy	5,021,000
Poplar to Wolf Point	3,296,000
FP OM Buildings	654,000
TOTAL	24,597,000
Dry Prairie:	
Work Plan (Branch Pipelines): A, Bainville and Other Branch Lines:	
Federal	5,246,000
State and Local	1,259,000
TOTAL	6,505,000
Federal	29,843,000
State and Local	1,259,000
Total	31,102,000

The sponsor Tribes and Dry Prairie greatly appreciate the previous appropriations from the subcommittee that have permitted building the Missouri River intake, the critical water source, and the first phase of the Culbertson to Medicine Lake Pipeline Project.

The request is less than the average annual appropriations needed to complete the project in fiscal year 2012 (\$34,446,000), as provided by the authorizing legislation, but is within our capability to use:

	Fiscal Year 2007
Total Federal Funds Authorized (October 2005 Dollars)	\$247,267,000
Federal Funds Expended Through Fiscal Year 2006	\$40,590,000
Percent Complete	16.42
Amount Remaining	\$206,677,000
Average Annual Required for Fiscal Year 2012 Finish (Public Law 106-382)	\$34,446,000
Fiscal Year 2006 Amount Requested	\$29,797,000
Years to Complete	6

Note that cost indexing from last year due to inflation increased the cost of the project from \$235 million to \$247 million, an increase of \$12 million. Increases in the level of appropriations are needed to outpace inflation.

PROPOSED ACTIVITIES

Public Law 106-382 (October 27, 2000) authorized this project, which includes all of the Fort Peck Indian Reservation in Montana and the Dry Prairie portion of the project outside the Reservation.

Fort Peck Indian Reservation

On the Fort Peck Indian Reservation the Tribes have used appropriations from previous years to construct the Missouri River raw water intake, a critical feature of the regional water project. The raw water pump station has also been constructed, and the raw water pipeline between the Missouri River and the water treatment plant has been constructed to within 2 miles of the water treatment plant. The sludge lagoons at the water treatment plant are currently under construction. All projects have bid under the engineer's estimate. The critical Missouri River water treatment plant will begin construction in spring 2006 and will use \$12.600 million of funds on hand. At a cost of \$31.0 million the project (contract and non-contract costs) will be constructed over a 3-year period. Fiscal year 2007 funds of \$15.573 million are needed to honor the construction contract. The remaining funds would be requested in fiscal year 2008.

The request for fiscal year 2007 also provides for construction of pipelines from the water treatment plant toward the communities of Poplar (Poplar to Big Muddy) and Wolf Point (Poplar to Wolf Point). These are the principal core pipelines that extend east and west of the water treatment plant to serve the Fort Peck Indian

Reservation and to connect to Dry Prairie facilities on the east and west boundaries of the Reservation. The funds for the pipeline projects are \$5,025 and \$3,299 million, respectively. The Tribes will also use \$654,000 for an administration, operation and maintenance building. The Bureau of Reclamation can confirm that the use of funds proposed for fiscal year 2007 is well within the project's capability.

The pipeline project from the water treatment plant to Poplar will provide a source of water for a section of the Fort Peck Indian Reservation contaminated by oil drilling operations and the subject of EPA orders to the responsible oil company. There is urgency in completing the pipeline to Poplar before the advancing plume of contamination reaches existing community wells. The oil company will provide the distribution system necessary to mitigate the problems and the Assiniboine and Sioux Rural Water System will provide the interconnecting pipeline without duplicating any facilities identified in the Final Engineering Report.

Dry Prairie

Dry Prairie has used previous appropriations to construct core pipelines and a booster pump station from the community of Culbertson to serve the communities of Froid and Medicine Lake. This project represents a significant portion of the main core pipeline for the eastern half of the Dry Prairie Project. Pipelines were sized to serve the area north of the Missouri River, south of the Canadian border and between the Fort Peck Indian Reservation and the North Dakota border (see general location map attached).

The project relies on interim water supplies. The regional water treatment plant will provide finished water when pipelines are constructed to the interconnection point for Dry Prairie at the Big Muddy River. The project between Culbertson, Froid and Medicine Lake is in full operation and serves the last two mentioned communities and a small number of rural users.

The completed system provides Dry Prairie with capability to build branch pipelines and connect rural areas in the south half of the east half of the Dry Prairie Project. Bainville and Dane Valley residents can be served with the existing system capacity that is now constructed and in operation. Fiscal year 2006 funds are being used to construct part of the distribution to this area.

The request for fiscal year 2007 funds of \$5,246,000, supplemented by a non-Federal cost share of \$1,259,000, will be used to finish branch pipelines connecting with the Culbertson-Froid-Medicine Lake core pipeline. Additional funds will be available to build other branch lines in other areas of the project and continue bringing high quality water to rural users in need. The Bureau of Reclamation can confirm the capability to construct these pipelines based on the current status of design.

ADMINISTRATION'S SUPPORT

The Tribes and Dry Prairie worked extremely well and closely with the Bureau of Reclamation prior to and following the authorization of this project in fiscal year 2000. The Bureau of Reclamation has heavily reviewed and commented on the Final Engineering Report, and all comments were incorporated into the report and agreement was reached on final presentation. OMB reviewed the Final Engineering Report prior to its submission to Congress in the final step of the approval process. The Commissioner, Regional and Area Offices of the Bureau of Reclamation have been consistently in full agreement with the need, scope, total costs, and the ability to pay analysis that supported the Federal and non-Federal cost shares. There have been no areas of disagreement or controversy in the formulation of the project.

The Bureau of Reclamation collaborated with the Tribes and Dry Prairie to conduct and complete value engineering investigations of the Final Engineering Report (planning), the Culbertson to Medicine Lake pipeline (design), the Poplar to Big Muddy River pipeline (design), the Missouri River intake (design) and on the regional water treatment plant (design). Each of these considerable efforts has been directed at ways to save construction and future operation, maintenance and replacement costs as planning and design proceeded. Agreement with Reclamation has been reached in all value engineering sessions on steps to take to save Federal and non-Federal costs in the project.

The Bureau of Reclamation conducted independent review of the final plans and specifications for the Missouri River raw water intake, the regional water treatment plant and the Culbertson to Medicine Lake Project. The agency participated heavily during the construction phases of those projects and concurred in all aspects of construction from bidding through the completion of construction. (The regional water treatment plant has not yet been constructed).

Cooperative agreements have been developed and executed from the beginning phases to date between the Bureau of Reclamation and the Tribes and between Bureau of Reclamation and Dry Prairie. Those cooperative agreements carefully set out

goals, standards and responsibilities of the parties for planning, design and construction. All plans and specifications are subject to levels of review by the Bureau of Reclamation pursuant to the cooperative agreements. The sponsors do not have the power to undertake activities that are not subject to oversight and approval by the Bureau of Reclamation. Each year the Tribes and Dry Prairie, in accordance with the cooperative agreements, develop a work plan setting out the planning, design and construction activities and the allocation of funding to be utilized on each project feature.

Clearly, the Fort Peck Reservation Rural Water System is well supported by the Bureau of Reclamation. Congress authorized the project with a plan formulated in full cooperation and collaboration with the Bureau of Reclamation, and major project features are under construction with considerable oversight by the Agency.

LOCAL PROJECT SUPPORT

The Fort Peck Tribes have supported the project since 1992 when they conceived it and sought means of improving the quality of life in the region. The planning was a logical step after successful completion of an historic water rights compact with the State of Montana. This compact was the national "ice breaker" that increased the level of confidence by other Tribes in Indian water right settlement initiatives. The Tribes did not seek financial compensation for the settlement of their water rights but expected development of meaningful water projects as now authorized.

The 1999 Montana Legislature approved a funding mechanism from its Treasure State Endowment Program to finance the non-Federal share of project planning and construction. Demonstrating support of Montana for the project, there were only three votes against the statutory funding mechanism in both the full House and Senate. The 2001 through 2005 Montana Legislatures have provided all authorizations and appropriations necessary for the non-Federal cost share.

Dry Prairie support is demonstrated by a financial commitment of all 14 communities within the service area to participate in the project. Rural support is strong, with about 70 percent of area farms and ranches intending to participate as evidenced by their intent fees of \$100 per household.

NEED FOR WATER QUALITY IMPROVEMENT

The Fort Peck Indian Reservation was previously designated as an "Enterprise Community", underscoring the level of poverty and need for economic development in the region. The success of economic development within the Reservation will be significantly enhanced by the availability of higher quality, safe and more ample municipal, rural and industrial water supplies that this regional project will bring to the Reservation, made more necessary by an extended drought in the region. Outside the Fort Peck Indian Reservation, the Dry Prairie area has income levels that are higher than within the Reservation but lower than the State average.

The feature of this project that makes it more cost-effective than similar projects is its proximity to the Missouri River. The southern boundary of the Fort Peck Indian Reservation is formed by the Missouri River for a distance of more than 60 miles. Many of the towns in this regional project are located 2 to 3 miles from the river, including Nashua, Frazer, Oswego, Wolf Point, Poplar, Brockton, Culbertson, and Bainville. As shown on the enclosed project map, a transmission system outside the Fort Peck Indian Reservation will deliver water 30 to 40 miles north of the Missouri River. Therefore, the distances from the Missouri River to all points in the main transmission system are shorter than in other projects of this nature in the Northern Plains.

PREPARED STATEMENT OF THE THREE AFFILIATED TRIBES

Our lands were flooded in the early 1950's, over 50 long years ago, with the construction of the Garrison Dam. That dam took from us over 156,000 acres of our best and most fertile land. We lost forever the river bottomlands where our Tribal membership and our Tribal ancestors lived and prospered. In the late 1940's, the Three Affiliated Tribes would have been looking to construct two or three Rural Water Projects on Fort Berthold. With the construction of the dam and a physical barrier of Lake Sakakawea, we are now required to construct six or seven water treatment plants as well as Rural Water Distribution Projects to meet the needs of our Reservation. Our land is geographically and physically split into six separate and distinct areas. Many of our Tribal members still do not have access to safe and abundant drinking water.

Under the Dakota Water Resources Act of 2000 (Public Law 106–554), Congress has charged the Secretary of the Interior with the responsibility to “construct, operate, and maintain” the Fort Berthold Rural Water Supply System. The Three Affiliated Tribes depends on funding appropriated for the purposes under this act to develop water supply systems on the Fort Berthold Reservation. Funding for tribal water construction projects has always been disproportionately lower than funding for other projects in the Garrison Diversion Unit. Over the last 30 years, Congress has appropriated well over \$600 million for the Garrison Diversion Unit and less than \$30 million of these funds have been expended on all Indian MR&I projects combined.

To address the Fort Berthold Reservation’s water supply problems, the Tribes have undertaken the construction of the Fort Berthold Rural Water Supply System. The Fort Berthold Rural Water Supply System currently consists of four separate water treatment facilities and distribution systems with a total of 750,000 linear feet of water mains and the capacity to store 1,000,000 gallons of potable water. The Fort Berthold Rural Water Supply System currently serves 586 households and last year added 30 new households to the system.

With the passage of the Dakota Water Resources Act of 2000, we have begun a process of reevaluation of our critical water needs and an analysis of actions and infrastructure we need to address those needs. Currently we have plans for numerous water supply and water distribution projects that will, when constructed in total, provide a safe and dependable supply of water to the Fort Berthold Indian Reservation. Our plan, when completed, will provide such benefits to all residents of the Reservation, both rural and residential residents, and both Indian and non-Indian alike.

We have carefully considered the opportunities now made available to us. Our infrastructure projects are purposely fragmented and designed so that we may adapt and accommodate both small and large appropriation amounts and so that we can also proceed with multiple projects in any given year. Preliminary estimates of the costs of our identified projects indicate a need for over \$95 million. The DWRA has an indexing clause, which reflects the inflation percentage of construction cost on MR&I Water Projects. The amount of indexing for Fort Berthold’s component has exceeded the \$34 million that is projected, at the end of 2008. To date, we have only received \$3.805 million in funding for these water projects. The Tribes have borrowed another \$2.5 million towards construction of its water supply projects. When completed in full we anticipate installation of nearly 1,000 miles of pipeline, the construction of nine separate rural water reservoirs and tanks, and a system capacity for service to over 1,500 rural households. The work will also include an upgrade of our four existing water treatment plants and Tribal participation in the water infrastructure development of the various communities of the Reservation.

Those projects identified in our six specific segments include the following:

Four Bears Segment.—We have already installed approximately 17 miles of pipeline and an elevated storage tank at a cost of over \$2 million. There is a need to expand the water treatment plant in this segment as this plant is nearing its 200 gallon-per-minute capacity. The total costs to resolve the water needs of this segment, and to assist our McKenzie County neighbors with their critical water needs, are estimated to be approximately \$7 million.

North Segment.—We have joined the City of New Town in their efforts in the construction of a new water treatment plant. Our commitment to New Town in this effort is costing approximately \$2.5 million. That plant has the capacity to provide water to all users of the segment, including growth within this segment, for the next 40 years. Subsequent projects needed within this area include the construction of a rural water system which will utilize the New Town treatment plant. The total costs to resolve the water needs of this segment are estimated to be approximately \$22 million. With the possibility of completing the negotiation with the City of New Town, additional appropriations will be needed to bring this water source into the FBRW. If sufficient water production can’t be produced by the city, a separate water treatment plant may be needed to provide potable water to the North and Northeast Segment’s Rural Water Lines. An additional \$350,000 of O&M funding will be necessary to accommodate the new component to the FBRW System.

Northeast Segment.—There is an immediate need for the installation of approximately 36 miles of pipeline and the construction of a ground level storage tank. The cost for this project is estimated at \$2.79 million. Subsequent projects needed within this segment will allow for a continuation of the water line to other rural areas of the segment and will allow us to furnish water to our neighbors of adjacent Mountrail County and the North Central Rural Water Consortium to our Reservation. The total costs to resolve the water needs of this segment, and to assist our

Mountrail County neighbors with their critical water needs, are estimated to be \$15 million.

West Segment.—We have already replaced an existing treatment plant intake line. This project cost approximately \$1.07 million. Subsequent projects needed within this segment will allow for a construction of a rural water system and an expansion of the existing water treatment plant. The water needs of this segment, and to assist our McKenzie County neighbors, will be addressed with this expansion. The total costs to resolve the water needs of this segment are estimated to be \$23 million.

South Segment.—There is an immediate need for the replacement an existing intake line, expansion of the existing water treatment plant and a water storage reservoir. The anticipated cost is approximately \$3.3 million. Subsequent projects needed within this segment include the construction of a rural water system and further expansion of the existing water treatment plant. The total costs to resolve the water needs of this segment are estimated to be \$12 million.

East Segment.—There is an immediate need for the installation of approximately 48 miles of pipeline. This first effort in this segment is anticipated to cost approximately \$1.92 million. Subsequent projects needed within this area will allow a continuation of the water line to other rural areas of the segment, and for a water treatment plant expansion. The total costs to resolve the water needs of this segment are estimated to be \$16.59 million.

As you can see, the total funding needed to accommodate the water supply system needs of the Three Affiliated Tribes is in excess of \$95 million.

Over the next several years, major construction expenses for the Fort Berthold Rural Water Supply System are expected to peak. A minimum of \$12.165 million is needed in fiscal year 2007 to enable the Tribes to construct the next productive stage of the project. The Tribes also require Operation, Maintenance and Replacement (“OM&R”) funding for calendar year 2007 of at least \$2.5 million. As our water supply systems expand, our operation and maintenance costs increase. We ask that appropriations for these rising OM&R be increased in future years to cover these increasing costs. The Bureau of Reclamation is our funding agency, but they are restricted from requesting sufficient appropriations or budgeting sufficient amounts to cover the increasing cost of operating and maintaining a water system of our design. Currently another governmental agency (OMB) sets target budgeting amounts that USBR must maintain and this doesn’t address the amount of appropriation actually needed. Congress needs to get the Office of Management and Budget to make adjustments and to meet the TRUST RESPONSIBILITY OF THE U.S. GOVERNMENT.

Also, the Fort Berthold Rural Water Program currently provides indirect costs to the Three Affiliated Tribes through its Construction and OM&R program funds. The Bureau of Reclamation has PL638 capabilities with Indian Tribes. However, unlike the Bureau of Indian Affairs, Reclamation does not have an indirect cost pool which may be utilized by Tribes. The current indirect cost funds are taken from the direct OM&R line items, which hinders the program. In order to alleviate this, an indirect cost pool should be implemented for USBR for its contracts with Tribes.

Monies which may be provided for our immediate needs only allow us to start the infrastructure development process in each segment. We need to establish a process of continued funding in subsequent years to complete the facilities of each segment in a timely fashion. If we proceed at the present funding rate, it will take us years to complete our projects and construction costs will undoubtedly increase beyond increases in funding. After enduring a wait of 50 years to even begin this process, it is not reasonable to continue to delay the needs addressed by the Act by continuing to fund these projects at unreasonable levels.

We request a favorable review of our request for \$12.165 million which will allow a start of construction of the immediately needed facilities within each segment. We believe that, given adequate funding levels in the \$15 million to \$20 million per year range, we could substantially complete all infrastructure projects within the six Reservation segments in a 4- to 6-year time frame.

PREPARED STATEMENT OF THE OGLALA SIOUX RURAL WATER SUPPLY SYSTEM

MNI WICONI PROJECT (PUBLIC LAW 100–516, AS AMENDED)

FISCAL YEAR 2007 CONSTRUCTION BUDGET REQUEST

The Mni Wiconi Project beneficiaries (as listed below) respectfully request appropriations of \$43.032 million for construction as shown below:

	Amount
Oglala Sioux Rural Water Supply System:	
Core	\$1,492,000
Pine Ridge (Distribution)	21,405,000
West River/Lyman-Jones Rural Water System	10,534,000
Rosebud Rural Water System	9,601,000
Total	43,032,000

and \$9.256 million for operation, maintenance and replacement.

Note that the Lower Brule project will complete construction in fiscal year 2006 and that no funds are requested for fiscal year 2007.

The project sponsors were provided by the 107th Congress (Public Law 107-367) with authority to finish in fiscal year 2008. Three years are needed to conclude our project at the rate requested with completion in fiscal year 2009 (see table below). Completion of the project is achievable in fiscal year 2009 if funded at the rate requested.

	Amount
Total Federal Funding (Oct 2005 Dollars)	\$439,927,980
Estimated Federal Spent Through Fiscal Year 2006	\$310,832,465
Percent Spent Through Fiscal Year 2006	70.66
Amount Remaining	\$129,095,515
Completion Fiscal Year (Statutory Fiscal Year 2008; Public Law 107-367)	2,009
Years to Complete	3
Average Annual Required for Finish	\$43,032,000

The administration's fiscal year 2007 budget is \$22.914 for construction and \$9.256 for OMR. The project is now over 70 percent complete and can be completed in the next 3 years, but the fiscal year 2007 construction budget is highly inadequate and significantly less than the \$31 million for construction available to the project before the PART exercise on rural water projects in 2003. The project sponsors strongly urge that the subcommittee appropriate funds to complete the Mni Wiconi Project over the next 3 years. The needs and merits of this project are considerable as described in section 2. The testimony is supplemented by sections 3 through 8.

UNIQUE NEEDS OF THIS PROJECT

This project covers much of the area of western South Dakota that is the Great Sioux Reservation established by the Treaty of 1868. Since the separation of the Reservation in 1889 into smaller more isolated reservations, including Pine Ridge, Rosebud and Lower Brule, relations between the Indian population and the non-Indian settlers on Great Sioux Reservation lands have been improving in successive generations. The Mni Wiconi Project is perhaps the most significant opportunity in more than a century to bring the diverse cultures of the two societies together for a common good. Much progress has been made due to the good faith and genuine efforts of both the Indian and non-Indian sponsors. The project is an historic basis for renewed hope and dignity among the Indian people. It is a basis for substantive improvement in relationships.

Each year our testimony addresses the fact that the project beneficiaries, particularly the three Indian Reservations, have the lowest income levels in the Nation. The health risks to our people from drinking unsafe water are compounded by reductions in health programs. We respectfully submit that our project is unique and that no other project in the Nation has greater human needs. Poverty in our service areas is consistently deeper than elsewhere in the Nation. Health effects of water borne diseases are consistently more prevalent than elsewhere in the Nation, due in part to: (1) lack of adequate water in the home; and, (2) poor water quality where water is available. Higher incidences of impetigo, gastroenteritis, shigellosis, scabies and hepatitis-A are well documented on the Indian reservations of the Mni Wiconi Project area. Progress has been made in the reducing the occurrence of these diseases.

At the beginning of the third millennium one cannot find a region in our Nation in which social and economic conditions are as deplorable. These circumstances are

summarized in Table 1.¹ Mni Wiconi builds the dignity of many, not only through improvement of drinking water, but also through direct employment and increased earnings during planning, construction, operation and maintenance and from economic enterprises supplied with project water. We urge the subcommittee to address the need for creating jobs and improving the quality of life on the Pine Ridge, Lower Brule and Rosebud Indian reservations of the project area.

TABLE 1.—PROFILE OF SELECTED ECONOMIC CHARACTERISTICS: 2000

Indian Reservation/State	2000 Population	Change From 1990 (Percent)	Income		Families Below Poverty (Percent)	Unemployment (Percent)
			Per Capita (Dollars)	Median Household (Dollars)		
Pine Ridge Indian Reservation	15,521	27.07	6,143	20,569	46.3	16.9
Rosebud Indian Reservation	10,469	7.97	7,279	19,046	45.9	20.1
Lower Brule Indian Reservation	1,353	20.48	7,020	21,146	45.3	28.1
State of South Dakota	754,844	8.45	17,562	35,282	9.3	3.0
Nation	281,421,906	13.15	21,587	41,994	9.2	3.7

Employment and earnings among the Indian people of the project area are expected to positively impact the high costs of health-care borne by the United States and the Tribes. Our data suggest clear relationships between income levels and Federal costs for heart disease, cancer and diabetes. During the life of the Mni Wiconi Project, mortality rates among the Indian people in the project area for the three diseases mentioned will cost the United States and the Tribes more than \$1 billion beyond the level incurred for these diseases among comparable populations in the non-Indian community within the project area. While this project alone will not raise income levels to a point where the excessive rates of heart disease, cancer and diabetes are significantly diminished, the employment and earnings stemming from the project will, nevertheless, reduce mortality rates and costs of these diseases. Please note that between 1990 and 2000 per capita income on Pine Ridge increased from \$3,591 to \$6,143, and median household income increased from \$11,260 to \$20,569, due in large part to this project, albeit not sufficient to bring a larger percentage of families out of poverty (Table 1).

Financial support for the Indian membership has already been subjected to drastic cuts in funding programs through the Indian Health Service and the Bureau of Indian Affairs. This project is a source of strong hope that helps off-set the loss of employment and income in other programs and provide for an improvement in health and welfare. Tribal leaders have seen that Welfare Reform legislation and other budget cuts nationwide have created a crisis for tribal government because tribal members have moved back to the reservations in order to survive.

The Mni Wiconi Project Act provides that the United States will work with us:

“ . . . the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply and public health needs of the Pine Ridge, Rosebud and Lower Brule Indian Reservations . . . ”

Indian support for this project has not come easily because the historical experience of broken commitments to the Indian people by the Federal Government is difficult to overcome. The argument was that there is no reason to trust and that the Sioux Tribes are being used to build the non-Indian segments of the project and the Indian segments would linger to completion. These arguments have been overcome by better planning, an amended authorization and hard fought agreements among the parties. The subcommittee is respectfully requested to take the steps necessary to complete the critical elements of the project proposed for fiscal year 2007.

SUPPLEMENTAL TESTIMONY

OSRWSS CORE PIPELINE REACHES PINE RIDGE INDIAN RESERVATION IN FISCAL YEAR 2006

The Pine Ridge Indian Reservation and parts of West River/Lyman-Jones remain without points of interconnection to the OSRWSS core. The fiscal year 2006 funding

¹Table 1 was based on census data that understates population and poverty on the reservations and overstates income when compared with Interior sources. The purpose of Table 1 is to compare statistics from a single source between decades, namely the United States Census, but use of the data does not imply acceptance of census statistics by the Tribes.

level will complete the OSRWSS Kadoka to White River pipeline to the northeast corner of the Pine Ridge Indian Reservation where, in combination with the western part of West River/Lyman-Jones, the remaining 50 percent of the design population resides.

OSRWSS will use \$1,492,000 in fiscal year 2007 funds to begin construction of the pipeline link between the OSRWSS North core and South core. When completed, this essential pipeline will permit the delivery of water to the Pine Ridge Indian Reservation and parts of West River/Lyman Jones by alternative pipeline routes and will finalize the strategy in the Final Engineering Report to provide reliability in the delivery of a safe and adequate water supply.

Oglala Sioux Tribe supports the funding request of West River/Lyman Jones for fiscal year 2007, which focuses on building the OSRWSS North Core westerly toward Hayes through the West River/Lyman Jones service area. The intent is to complete the OSRWSS North Core and all other OSRWSS core facilities in fiscal year 2008. West River/Lyman Jones is acting as the Tribe's contractor on the OSRWSS North Core.

Nearly half of the Mni Wiconi design population is located on the Pine Ridge Indian Reservation. The fiscal year 2006 work plan and the fiscal year 2007 funding request will make major advances in the completion of the OSRWSS core. Fiscal year 2008 will be the final year to complete the core facilities. Earlier stages of the OSRWSS core facilities have served the Lower Brule Indian Reservation, Rosebud Indian Reservation and eastern regions of West River/Lyman Jones.

Funding for OSRWSS core and distribution facilities is necessary to address health needs and bring economic development to the Pine Ridge Indian Reservation, designated as one of five national rural empowerment zones in the late 1990's. The designation serves to underscore the level of need. Economic development is largely dependent on the timely completion of a water system, which depends on appropriations for this project.

Finally, the subcommittee is respectfully requested to take notice of the fact that fiscal year 2007 will significantly advance construction of facilities that continue our progress toward the end of the project. The subcommittee's past support has brought the project to the point that the end can be seen in fiscal year 2009.

The following sections describe the construction activity in each of the rural water systems.

OGDLALA SIOUX RURAL WATER SUPPLY SYSTEM—DISTRIBUTION

With the conclusion of projects completed 5 years ago (2002), the Oglala Sioux Tribe finished all facilities that could be supported from local groundwater. The Tribe, representing nearly 50 percent of the project population will rely on the OSRWSS core to convey Missouri River water to and throughout the Reservation as a primary water source to complement the groundwater source. Much pipeline has been constructed, primarily between Kyle, Porcupine, Manderson and Red Shirt and between Pine Ridge Village and the communities of Oglala and Slim Buttes.

Of critical importance to the Oglala Sioux Tribe is the continuation of the main transmission system from the northeast corner (Highway 73/44 junction) of the Reservation to Kyle in the central part of the Reservation. This transmission line construction has been stalled due to decline in the appropriation levels for Mni Wiconi after fiscal year 2003. The transmission line is needed to interconnect the OSRWSS core system with the distribution system described in the previous section. Groundwater sources with high arsenic and radionuclides need replacement at the earliest possible time to reduce exposure of the population relying on those sources. With completion of the transmission pipeline to Kyle, Missouri River water can be delivered to the existing OSRWSS distribution system constructed between 1994 and 2002. The most populous portions of the Reservation can then be served by the Missouri River water treatment plant for the first time.

This critical segment of the project can be completed to the halfway point in fiscal year 2007. It will require funds in fiscal year 2007 and fiscal year 2008 to complete. The component is urgently needed for the OSRWSS core system to be utilized on the Pine Ridge Indian Reservation and to provide a safe and adequate replacement supply for contaminated groundwater sources.

WEST RIVER/LYMAN-JONES RURAL WATER SYSTEM—DISTRIBUTION

The requested appropriation is part of a 3-year effort directed to serving WR/LJ members between the Mni Wiconi water treatment plant at Ft. Pierre and the City of Philip, a distance of approximately 70 pipeline miles. Funds received in fiscal year 2007 will be used for construction of the North Core pipeline and distribution lines to service areas adjacent to the core pipeline.

The North Core pipeline serves as the primary water source for half of the WR/LJ membership, most of which is now served by water sources that do not meet SDWA standards or by interim sources of very limited capacity and reliability. The North Core pipeline additionally provides a limited capacity alternate source to the South Core pipeline serving the Oglala Sioux Tribe.

Distribution pipelines in the Four Corners to Philip Junction service area meets the domestic and livestock needs of the rural area and the municipal needs of the Town of Midland. Recent membership surveys from that area indicate that most of the residents haul their domestic water and half of the ranchers also haul water for their livestock. This area is in desperate need of a reliable supply of quality water.

ROSEBUD RURAL WATER SYSTEM (SICANGU MNI WICONI)

As in past years, Rosebud's work plan focuses on bringing high quality water to more people and improving critical infrastructure on the Rosebud Reservation. The Tribe accomplishes this through the wise use of project funds and working with other agencies and entities to obtain the maximum value from available funds.

The East Todd project provides quality water to an area of Todd County that is suffering from increasing nitrate concentrations in the limited groundwater available in the area. This project was initiated in 2006 and will be completed in 2007. This project includes more miles of pipeline than any other in the Rosebud system and by bidding it as one project the unit costs for pipelines are reduced.

The Old Rosebud Improvements are being designed in 2006 and will be constructed in 2007. This project focuses on the replacement of older corroded metallic pipelines and undersized pipelines. The replacement pipelines will be able to meet critical demands in the center of government for the Rosebud Sioux Tribe. The timing of construction of this project is being coordinated with the Bureau of Indian Affairs. The Bureau of Indian Affairs is funding the replacement of the older paved streets in the community and construction of pipelines will coincide with street construction. This cooperative approach reduces the cost of pipeline construction because the cost of pavement demolition and replacement is eliminated as a Mni Wiconi Project cost. The cooperative approach also protects the investment in the streets and pipes because the new pavement will not have to be disturbed for the replacement or repair of the water mains.

The Todd County Reservoirs project provides additional storage for the Todd County portion of the Sicangu Mni Wiconi. Two similar reservoirs are being combined into one bidding package as a means of reducing the cost of the work. The eastern reservoir provides storage for the East Todd project area and the other will replace the corroded steel reservoir that supplies the town of Mission. The replacement of the Mission reservoir is integral to the Mission Area Improvements.

The Mission Area Improvements address all facets of this older municipal system that was transferred to the United States in trust for the Tribe in 2002. The improvements address the deficiencies identified in the transfer agreement and other aspects of the system. For example, one of the low-yielding wells will be replaced and chlorination and storage will be provided at the wellfield rather than 7 miles further north near the town of Mission. This will provide treated water to the residents along the pipeline route. The pipeline route is adjacent to U.S. Highway 83 and is in one of the more rapidly growing areas on the reservation.

The Two Strike North project fills in the gap north of Two Strike and south of Rosebud where there is currently no service. Because of proximity to two of the larger reservation communities, this is also a rapidly expanding area.

The Service Lines and Connections project is an ongoing effort to provide existing and new homes with high-quality water from the Sicangu Mni Wiconi. It also provides for livestock water connections as well. This work is done by tribal crews and provides direct employment benefits as well as quality water to reservation residents. In addition to the construction work, the tribal crew is now utilizing global positioning system (GPS) equipment in the layout of the facilities and preparation of the record drawings. This skill can be used by both the individual tribal members and the Tribe as a whole in other endeavors after the construction of Mni Wiconi is completed. This is just one more example of the Tribe obtaining additional value from Mni Wiconi Project funds.

LOWER BRULE RURAL WATER SYSTEM—DISTRIBUTION

The Lower Brule Rural Water System (LBRWS) has gained the support of the other sponsors to complete its share of the project with funds appropriated in the fiscal year 2006 budget. The vast majority of the funds necessary to complete the LBRWS were provided in the fiscal year 2005 budget. LBRWS will only be receiving

\$440,000 from the fiscal year 2006 budget to fully complete its system. The result of completing the funding for the LBRWS is a savings of \$1.5 million to the project as a whole.

With the funds received in fiscal year 2006, LBRWS will complete the replacement of some water lines that were installed previous to this project and that have become undersized.

The LBRWS would like to take this opportunity to thank the other sponsors for their cooperation and support in completing the funding of the LBRWS in this manner and Congress, especially the South Dakota delegation past and present, for their continued support of this truly needed project. It should be noted, however, that this will not end LBRWS's involvement in the project. LBRWS will continue to work with and support the other sponsors in seeing the entire project come to fruition.

OPERATION, MAINTENANCE AND REPLACEMENT BUDGET

The sponsors have and will continue to work with Reclamation to ensure that their budgets are adequate to properly operate, maintain and replace (OMR) respective portions of the overall system. The sponsors will also continue to manage OMR expenses in a manner ensuring that the limited funds can best be balanced between construction and OMR.

The project has been treating and delivering more water over the last 3 years from the OSRWSS Water Treatment Plant near Fort Pierre. Completion of significant core and distribution pipelines has resulted in more deliveries to more communities and rural users. The need for sufficient funds to properly operate and maintain the functioning system throughout the project has grown as the project has now reached 71 percent completion. The OMR budget must continue to be adequate to keep pace with the system that is placed in operation.

The Mni Wiconi Project tribal beneficiaries (as listed below) respectfully request appropriations for OMR fiscal year 2006 in the amount of \$9,256,000 as requested in the fiscal year 2007 budget:

	Amount
Oglala Sioux Rural Water Supply System:	
Water Treatment Plant and Core Pipeline	\$2,073,000
Pine Ridge Distribution	2,400,000
Rosebud Rural Water System	2,200,000
Lower Brule Rural Water System	1,400,000
Reclamation Oversight	1,183,000
Total	9,256,000

Be assured that water conservation is an integral part of the OMR of the project. Water conservation not only provides immediate savings from reduced water use and the need for extra production, it also extends the useful life and capacity of the system.

PREPARED STATEMENT OF THE WESTERN COALITION OF ARID STATES

FISCAL YEAR 2007 BUREAU OF RECLAMATION & DEPARTMENT OF ENERGY BUDGET

The Western Coalition of Arid States (WESTCAS) is writing in support of the following multi-State Federal programs, in priority order, under the Bureau of Reclamation and Department of Energy's budgets that we believe are deserving of your subcommittee's support during the fiscal year 2007 budget process:

- Colorado River Front Work and Levee System, Water Management Reservoir Near the All American Canal Subactivity—\$37.4 million;
- Yuma Area Projects, Excavating Sediments Behind Laguna Dam—\$3.5 million;
- Water Reclamation/Reuse Title XVI—\$30 million;
- Water 2025—\$14.5 million;
- Science and Technology—\$8.5 million;
- Atlas Mill Tailings Removal in Moab, Utah—\$22.8 million.

WESTCAS is a coalition of Western towns and municipalities, water and wastewater agencies, irrigation districts, Native American nations, companies with water and wastewater concerns and professionals in the fields of engineering, the environmental sciences, and natural resources law and policy. WESTCAS was formed in 1992 by Western water and wastewater agencies concerned with the quality and management of water resources in the Arid West. A grass roots organization,

WESTCAS is dedicated to encouraging the development of water programs and regulations which assure adequate supplies of high quality water for those living in the arid regions while protecting the environment.

COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

Water Management Reservoir near the All-American Canal Subactivity

Reclamation is completing a multi-phased study quantifying the need and options for regulatory storage to improve Colorado River management downstream of Lake Mead.

Reclamation has concluded that locating up to a 10,000 acre-foot capacity water management reservoir near the All-American Canal near Drop 2, 15 miles east of the Imperial Valley would significantly improve the flexibility of the Lower Colorado System. The reservoir's location would be of great benefit to the Colorado River Basin States. Benefits that include:

- conservation of reservoir system storage;
- improving river regulation and water delivery scheduling;
- providing opportunities for water conservation;
- storage and conjunctive use programs;
- and setting the stage for new cooperative water supply and water quality management endeavors with Mexico.

Reclamation funding of \$37.4 million is needed in fiscal year 2007 in order to obtain permits, acquire land, clear and prepare the site, design the reservoir and its inlet and outlet canals, and procure materials for construction.

This is one of four distinct subactivities to be undertaken in 2007 under the Water and Energy Management and Development Activity of the Colorado River Front Work and Levee System Project.

The President's fiscal year 2007 request for this activity is \$5.5 million. WESTCAS requests that Reclamation's funding for the Water Management Reservoir near the All American Canal subactivity are augmented so as to provide \$37.4 million for this work to progress sufficiently.

Yuma Area Projects, Excavating Sediments Behind Laguna Dam

While work on a reservoir near the All-American Canal proceeds, there is an immediate need to restore limited Colorado River regulatory storage capacity downstream of Parker Dam. This can be partly accomplished by excavating sediments that have accumulated behind Laguna Dam since its completion in 1909. Reclamation funding of \$3.5 million is needed in fiscal year 2007 to complete environmental compliance and procurement and begin dredging behind Laguna Dam.

This subactivity under the Yuma Area Projects, Facilities Maintenance and Rehabilitation activity would restore 1,100 acre-feet of storage behind Laguna Dam. Not only would this enhance the ability to regulate flows arriving at Imperial Dam, it would capture and re-regulate the water periodically released for the proper operation of Imperial Dam, benefiting both the Colorado River Basin States and Mexico.

WESTCAS requests that Reclamation's funding for sediment control be augmented so as to provide \$3.5 million for the work to excavate sediments from behind Laguna Dam.

The construction of a new regulating reservoir, and dredging sediments behind an existing dam will critically improve water delivery efficiencies and prevent the loss of up to 200,000 acre-feet per year from Colorado River reservoir storage.

WATER RECLAMATION/REUSE TITLE XVI

Projects funded under Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575) and the Reclamation Recycling and Water Conservation Act of 1996 (Public Law 104-266) will greatly enhance the Arid West's water supply reliability and the environment through effective water recycling and recovery of contaminated groundwater. Funding in the fiscal year 2007 budget for previously unfunded projects, as well as the continued support for previously funded projects, is essential to realizing regional water supply reliability. The Bureau of Reclamation's budget request for research into the technologies and science of water recycling is another vital step toward making water reuse a viable alternative for communities faced with limited water supplies. WESTCAS urges your full support for increasing the Title XVI funding to \$30 million.

WATER 2025

Implementation of Water 2025 includes water system optimization reviews that will assess the potential for water management improvements, financial assistance for irrigation and water districts in creating water markets and facilitating more ef-

ficient use of existing water supplies through water conservation, efficiency, and marketing projects. WESTCAS recommends your support of a Reclamation fiscal year 2007 budget that includes \$14.5 million in funding for the Water 2025 Program.

SCIENCE AND TECHNOLOGY

As the “Voice of Water Quality in the Arid West,” WESTCAS advocates wise use of water resources by promoting scientifically-sound laws, regulations, funding, and policies that protect public health and the environment in the arid West. WESTCAS is dedicated to the use of sound science in the promulgation of rules and regulations, and supports funding for water quality research, in particular. The Science and Technology Program uses funds for the development of new solutions and technologies that respond to the Bureau’s mission-related needs in this area. WESTCAS strongly recommends your support of a Reclamation fiscal year 2007 budget that includes \$8,500,000 in funding for the Science and Technology Program.

ATLAS MINE TAILINGS CLEANUP

In cooperation with the Utah State Environmental Quality Department, WESTCAS supports the President’s budget request of \$22.8 million in fiscal year 2007 for the purposes of moving forward with the clean-up of uranium mine tailings at the Atlas Site in Moab, Utah. WESTCAS supports the Governor of Utah’s position that these mine tailings must be removed from their dangerously close proximity to the Colorado River and advocates removal as the only acceptable solution to this issue.

Thank you for considering our request.

DEPARTMENT OF ENERGY

PREPARED STATEMENT OF THE BUREAU OF ECONOMIC GEOLOGY, THE UNIVERSITY OF TEXAS AT AUSTIN

This testimony addresses: (1) the fiscal year 2007 Energy and Water Development Appropriations bill regarding funding for oil and natural gas R&D; and (2) the Domestic Energy Production through Offshore Exploration and Equitable Treatment of State Holdings Act of 2006 (proposed by Representative Jindal as H.R. 4761).

The bottom line: Eliminating Federal investment in oil and gas R&D and mining programs is destroying the ability of U.S. universities to train science and engineering students in energy- and mining-related fields and significantly damaging independent oil and natural gas producers, who are responsible for 90 percent of the wells drilled in the United States. Contrary to a few decades ago, today, in terms of U.S. oil and natural gas R&D investment, the major international oil companies play a very limited role, do not benefit greatly from Federal oil and gas R&D, and should therefore have limited-to-no voice in U.S. R&D policy. The Office of Management and Budget does not appear to understand these realities. The slow erosion of the already paltry oil and gas R&D budget creates an instability that is destructive to the program, and ultimately harmful to the energy future of the United States. Congress must act to halt the annual OMB proposal to eliminate Federal oil and gas R&D.

Budget cuts to the U.S. Department of Energy’s Fossil Energy Research and Development program have severely limited the amount of research being conducted to promote a smooth transition to a natural gas, cleaner energy economy. To get to tomorrow’s energy future, we must meet today’s energy demand. Ironically, that means greater investment in oil, natural gas, and coal, which make up more than 85 percent of U.S. energy consumption, with oil and natural gas representing 60 percent, so that the bridge to the future is stable.

There is an overwhelming consensus that oil and natural gas will continue to dominate the Nation’s energy mix for decades to come. No matter how attractive the potential of alternative energy sources may appear today, none is seen as a viable alternative to meet the broad needs of American consumers before the midpoint of the century. Fossil fuels, led by oil and gas, will continue to account for the vast bulk of U.S. energy consumption for the near future.

DOE’s latest forecast projects a 35 percent increase in U.S. energy demand to 2025. Fossil energy’s share of that demand is expected to be stable or even increase slightly. Oil and natural gas are predicted to gain market share in that time, and DOE just ratcheted up its forecast for oil and gas prices in that period.

The gap between domestic conventional oil supply and demand will persist. In 2025, net imports of crude oil and refined products are forecast to reach 68 percent of U.S. petroleum consumption. Natural gas is following the same trend, with natural gas imports forecast to rise to 30 percent, up from 16 percent. In addition, America's trade deficit is at a record high, largely owing to soaring oil imports.

The easy (conventional) oil and gas are largely discovered. The future demand must be met by more complex and unconventional resources. Only research can bring the advances needed in technology to achieve the increased efficiency that makes yesterday's untapped resources economical to produce today. Yet, despite ever-increasing demands on energy supply, both domestically and globally, the number of trained scientists and engineers specializing in energy-related fields continues to decline. This is not true of our friends in the Far East, where enrollments in science and engineering programs continue to increase, and dwarf those in the United States.

Besides the crisis of diminishing research and development (R&D) capability and a declining workforce to address growing energy and talent needs, coastal States disproportionately and inequitably bear the cost of maintaining an infrastructure to develop energy resources without replenishment of funds.

H.R. 4761 would provide incentive for coastal States to strengthen educational programs that will train the next generation of scientists and engineers entrusted with our national energy production needs. At the same time, it will promote environmental accountability and restoration at the State level, where the benefits are greatest—right in the States' own "backyard." Renewed investment in energy R&D will stimulate a response to the call to discover more economically efficient means to supply our Nation's energy needs, both now and in the future.

The revenues returned to the States involved in oil shale and tar sands production through H.R. 4761 would promote the development of the infrastructure needed to realize this significant component of our unconventional natural gas resources. The United States has the opportunity to tap into this major resource that has not yet been globally exploited. Potential resources include such "exotic" sources as very deep gas (15,000 to 30,000 feet), natural gas below salt formations, natural gas disseminated in saltwater brines, and methane hydrates.

The United States has less than a tenth of Saudi Arabia's 240 billion barrels of estimated proved oil reserves, but it holds the bulk of the world's oil shale resource—at more than 2 trillion barrels—and its tar sands resource is pegged at more than 76 billion barrels.

Natural gas resources traditionally thought of as "unconventional" now account for the fastest growing segment of our natural gas supply: coalbed natural gas (CBNG), low-permeability ("tight") formations, and deep gas. In addition, the U.S. Geological Survey has estimated that deposits of methane hydrates probably hold 200,000 trillion cubic feet (Tcf) of natural gas in place within the U.S. Exclusive Economic Zone alone. Admittedly, this estimate is poorly constrained, but even if it were two orders of magnitude too high, it would still represent nearly a 100-year U.S. supply. Although economic recoverability of these vast deepwater accumulations has not yet been demonstrated, technical recoverability has been established through Arctic field tests. As with shale gas, coalbed methane, and tight gas, economic production of methane hydrates is perhaps only a matter of significant investment and new talent.

The key to realizing the potential of these resources is technological innovation. Despite today's high oil and gas prices, America's private sector, largely composed of smaller to mid-sized independent producers, is ill equipped to undertake the R&D needed to yield such innovations. The oil price collapses of the early 1980's and late 1990's decimated the research departments of the major U.S. oil companies. Small, independent producers (average company size: 12 employees) drill almost 90 percent of the wells in the United States and produce 60 percent of the Nation's natural gas and 40 percent of its oil. Yet these small companies have virtually no R&D capabilities.

The Federal Government has an important role to play in spurring the advanced technologies needed to recover domestic resources. Developing these new technologies for domestic use will entail risky, long-term R&D that the private sector has not undertaken on its own.

The Federal Government has already made a huge impact on U.S. oil and gas technology. Game-changing technology initiatives—such as carbon dioxide enhanced oil recovery (CO₂ EOR, which also provides an opportunity for CO₂ sequestration), CBNG, and tight gas—have emerged from DOE-sponsored oil and gas research programs. New technology paradigms, such as the Microhole and Deep Trek initiatives, are on the brink of commercialization and widespread acceptance by America's oil and gas industry.

At the same time, DOE's Oil and Natural Gas Environmental Solutions program offers an opportunity to access and recover, in an environmentally responsible manner, the 320 Tcf of gas and 22.2 billion barrels of oil that underlie Federal lands. Here, DOE serves a critical role as the "honest broker" in reconciling the Nation's conflicting but equally important energy and environmental needs.

The costs of not investing in America's energy future are great. Lack of Federal support of oil and natural gas R&D could have several negative effects:

- Compromise ongoing efforts to ensure the sustainability and reliability of the Nation's energy infrastructure.
- Contribute to the trends of ever-rising energy imports and persistently high oil and gas prices.
- Cost the U.S. Treasury hundreds of billions of dollars in foregone royalties, lease payments, taxes, and related economic ripple effects.

Another problem vital to national security is maintaining an adequate supply of mineral resources and trained professionals to find and develop these resources. In a recent article investigating the shortage of mining engineers, Peter Knights found that the supply of mining engineers from five countries that have a strong mining presence, the United States among them, decreased 25 percent from 2000 to 2002. Moreover, when commodity prices are high and demand peaks, competition for this scarce talent likewise peaks. During down cycles, graduates tend to move to other industry sectors, further exacerbating the problem. Knights found further that while university mining programs in the United States are being cut, enrollments in existing programs are declining.

A study of active, dormant, and recently closed programs related to economic geology in U.S. higher education institutions shows 7 programs closed within the last 5 years, leaving only 39 active institutions and 22 "dormant" institutions. Even many of the active institutions were found to lack funding to focus research on areas related to mineral resources. If programs at top-ranked schools like Stanford and Harvard are closing, and "active" programs are compromised by funding shortages, how will the United States populate a trained workforce to meet future needs?

A task force formed in 2004 by the Society for Mining, Metallurgy, and Exploration (SME)—an international professional society of more than 11,500 members from the minerals industry in nearly 100 countries—has focused attention on the critical issue of the shortage of mining engineers. Preliminary findings are that U.S. enrollment in mining engineering programs may need to be tripled to meet expected demand. Retiring faculty are creating another gap in the supply of trained professionals. SME estimates that as much as \$20 million per year of additional funds will be needed to sustain educational programs to meet the U.S. demand for mining engineers.

Funds from H.R. 4761 channeled into a Federal Energy and Mineral Resources Professional Development Fund would help sustain mining and petroleum schools and encourage growth of this important field.

The American Geological Institute (AGI), which has tracked enrollments in the geosciences since 1952, in its 2001 Report on the Status of U.S. Academic Geoscience Departments (<http://www.agiweb.org/career/rsad2001.pdf>) showed a 66.8 percent decline in geoscience enrollments from 1983 to 2000. AGI attributed the peak enrollment levels from 1965 to 1983 to growth in the petroleum sector.

But funding in support of research declined in all categories—private foundations, State, industry, other, and Federal—from 1999 to 2001. During that same period, AGI found the percentages of funding support also changed. More than 70 percent of funding came from Federal sources, which declined in total dollar amounts by more than 50 percent in that short time. That is, greater dependence on Federal funds accompanied drastically reduced research budget support. As in the mining industry, AGI also found an aging workforce in the geosciences that is not being replenished by new talent to meet anticipated needs.

Clearly, it is in the best interests of the United States for its institutions of higher education to have support and incentive to grow their programs to train geoscience and engineering professionals to sustain the supply of energy and mineral resources necessary to maintain a healthy U.S. economy.

Terminating the DOE's natural gas and oil research programs could deal a crippling blow to America's energy future. Today marks an unprecedented opportunity to reverse that trend. America has massive untapped hydrocarbon resources, whose ultimate combined energy potential outstrips that of any other country. And we are on the cusp of the technological innovations needed to realize that untapped potential.

America is the birthplace of the oil and gas industry and has long been the leader in oil and gas technology. But it also has the world's most mature oil and gas industry—and it still needs a technology pipeline not only to sustain it but also to let

it fulfill its potential and thus deliver all the benefits that the Nation can receive from that effort. It also needs a commitment to supporting a trained workforce to achieve national energy, environmental, and mineral extraction goals. Without Federal funding to spur technology innovations and attract new professionals to the industry, America will relinquish its leadership role—a trend that would be difficult to reverse.

PREPARED STATEMENT OF ANTHONY R. KOVSCEK

I write in regard to budget requests and appropriations for Oil and Natural Gas Technology within the Department of Energy. Specifically, I assert that zeroing out and shutting down DOE's oil and gas research and development efforts at this time is both short-sighted and not in the national interest. At the very least, I believe that you should maintain spending at fiscal year 2006 levels: \$32.7 million for natural gas R&D and \$31.7 million for oil R&D. Given the high prices of gasoline at the pump and natural gas at the residential meter, it is in the national interest to increase funding for Oil and Natural Gas Technology as well as increase funding for the development of other energy resources such as geothermal.

Full, consistent, steady funding of energy R&D efforts and especially for oil and natural gas production is essential to meet the energy challenge of the future. This research effort needs to continue in conjunction with the DOE laboratories, universities, and the private sector. Continuing effort is critical in the areas of unconventional resources that include: heavy oil, oil shale, fractured low permeability reservoirs, tight-gas sands, coalbed methane, and methane hydrates.

You may ask what will be lost without Federal funding? The answer has many different facets. First, the government and the public, loses entirely its ability to have research conducted in the above unconventional resources that are becoming increasingly important on the national and international stage. The Nation loses its voice to determine research directions and influence outcomes. Second, we lose energy-critical programs. For example:

- microhole technology to drill smaller diameter wells into deep resources;
- demonstration programs that reduce risk to early adopters and prove environmental conformance;
- research across the spectrum of oil and gas exploration and production technologies;
- advanced recovery concepts that allow the conversion of oil and gas resources into producible reserves;
- programs that benefit independent producers who do not have in-house research and technology development efforts nor access to such efforts;
- the Petroleum Technology Transfer Council that provides critical technology transfer services.

I have been told that oil and natural gas technology programs within DOE have been rated as “ineffective” and that this is a major piece of evidence cited for zeroing out these programs. I find this rating to be counter to what I hear from the energy industry. Let me cite three representative success stories that counter directly the above rating:

- DOE Fossil Energy through Oil and Natural Gas Technology programs has supported various institutions to study aspects of “interfacial phenomena” related to petroleum recovery. Three institutions that come to mind that received such support are the Petroleum Recovery Research Center in New Mexico, the University of Wyoming, and Lawrence Berkeley National Laboratory. While much of this work was quite fundamental, one conclusion reached is that the composition of fluids injected into oil reservoirs can have a marked effect on oil recovery. While not receiving extensive public fanfare, this work has been followed for a number of years by industry and is now the subject of extensive reservoir conditions testing in company laboratories and field pilot tests. Results look very promising and major capital investment in desalinization plants on the Alaska North Slope are being planned. The process now referred to within the industry as LoSal flooding has the potential to increase oil production by more than 1 billion barrels on the North Slope alone. Once proven successful, I predict that many independents will pick up this technology.
- There are extensive “diatomaceous” or “diatomite” reservoirs in California that are very tight, fractured, and consequently difficult to produce. These are so-called unconventional resources as discussed above. Cumulatively, these reservoirs hold from 12 to 18 billion barrels of oil. This is a size that is on-par with the initial estimates for the oil in place at Prudhoe Bay, Alaska. Again, DOE Fossil Energy through Oil and Natural Gas Technology programs supported re-

search that looked into various aspects of production from these diatomaceous reservoirs. Three institutions that come to mind are Lawrence Berkeley National Laboratory, Los Alamos National Laboratory, and Stanford University. They studied well stimulation methods, ground subsidence, and advanced recovery techniques for diatomite. While specific production figures per company are difficult to come by, it is well known that Aera Energy produces oil from the South Belridge Diatomite Reservoir, Chevron produces oil from the Lost Hills and Cymric Diatomite Reservoirs, and Berry Petroleum produces from the Midway Sunset Diatomite Reservoir. This names only a few that I could identify easily. The California Division of Oil, Gas, and Geothermal Resources confirms December 2005 production of about 63,760 bbl/day from diatomite reservoirs at South Belridge, 32,600 bbl/day from diatomite reservoirs at Lost Hills, and 23,000 bbl/day from diatomite/siliceous shale intervals at Cymric. A more careful accounting surely would increase the total production attributed to California diatomite.

—The last area is enhanced oil recovery and I will cite specifically investment in R&D efforts aimed at thermal recovery that date to the late 1970's and continue through the present. This is mainly pointed at heavy-oil production. These are oils that are very thick and viscous at reservoir temperature and, hence, do not flow well under primary or water injection conditions. The resource base of heavy oil within the United States is significant and in the neighborhood of 200 billion barrels of oil. At current consumption rates, this resource represents about 45 years of total oil supply for the United States. Many institutions have participated in research to unlock these resources using the thermal technologies of steam injection, hot water flooding, and in situ combustion. These institutions include the University of Southern California, Stanford University, and Lawrence Berkeley National Laboratory, among others. According to the Oil and Gas Journal's biennial survey, production from these technologies averaged 345,000 bbl/day in 2004.

These figures alone make the case that the small investment made by the DOE through Oil and Gas Technology R&D have paid out. Stories such as those above convince me that funding needs to be maintained and actually increased to ensure adequate production of important domestic resources.

PREPARED STATEMENT OF CUMMINS INC.

Cummins Inc. is pleased to provide the following statement for the record regarding the Department of Energy's fiscal year 2007 budget for Energy Efficiency and Renewable Energy; Electricity Delivery and Energy Reliability; and Fossil Energy programs. Cummins Inc., headquartered in Columbus, Indiana, is a corporation of complementary business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems. The funding requests outlined below are critically important to Cummins' research and development efforts, and would also represent a sound Federal investment towards a cleaner environment and improved energy efficiency for our Nation. We request that the committee fund the programs as identified below.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

Office of FreedomCAR and Vehicle Technologies/Vehicle Technologies

Advanced Combustion Engine R&D—Heavy Truck Engine.—This program is critical to the success of engine manufacturers achieving energy efficiency enhancements while meeting EPA's near zero 2010 emissions regulations. Heavy truck engines consume nearly 25 percent of all surface transportation fuels used in the United States. Technologies required to achieve EPA 2007 & 2010 emissions (90 percent reduction in 2007 and near zero emissions in 2010) are likely to decrease fuel efficiency. This program supports R&D to increase on-highway engine fuel efficiency while meeting future emissions regulations. The objective of this program is to demonstrate 50 percent engine system efficiency, an increase from an efficiency baseline of approximately 40 percent. To date, 45 percent engine efficiency has been demonstrated at 2007 emissions levels. Research is ongoing on advanced combustion technologies—homogeneous charge, low temperature and mixed mode combustion—which are capable of near zero levels of NOx and PM engine out emissions. However, additional research is needed to develop low temperature combustion recipes for all engine conditions and provide overall engine control and power capabilities for market acceptance. Planned research areas include simulation/modeling techniques, improved fuel injection systems, technology validation on single cylinder en-

gines and controls development. Other major categories of work involve vehicle system integration, sulfur management and robust particulate filters. Cummins urges that \$20 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engine R&D—Waste Heat Recovery.—This DOE program supports broader energy efficiency improvement and emissions goals for diesel engines by developing technologies for waste heat recovery and engine boosting. Nearly 60 percent of fuel energy is lost in diesel engines through wasted heat in exhaust, lubricants or coolants. This program is focused on identifying and developing innovative energy recovery technologies, such as thermoelectric, turbo-compounding and Rankine cycle technologies. Cummins has evaluated a Rankine cycle concept which recovers waste heat from charge air and EGR gas streams, and converts it into electricity. This electrical energy is expected to supplement engine power output. Planned activities in fiscal year 2007 include subsystem design, development and testing in a laboratory, and system integration in a vehicle. The funding increase will adequately fund recent DOE industry R&D funding awards in this area. Cummins urges that \$5.6 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engine R&D—Combustion and Emission Control R&D.—This program is critically important to the heavy-duty diesel engine company efforts to meet stringent emissions requirements in the future through better understanding of combustion technologies and properties. The research focus for this program is to develop advanced combustion regimes (HCCI & LTC) for light duty & heavy duty engine applications. A funding split under the program between the 21st Century Truck Partnership (21CTP) and the FreedomCAR partnership is recommended as follows: 21CTP—\$7.0 million (an increase of \$3.32 million); FreedomCAR Partnership—\$17.9 million. The 21CTP increase is recommended to support CRADA activities at the Department of Energy's national laboratories for broad research and development of advanced combustion systems to improved engine-out emissions and fuel efficiency. The increase will allow DOE to adequately support recent industry awards for High Efficiency Clean Combustion research funded under this initiative. Cummins urges that \$24.9 million be appropriated for this program in fiscal year 2007. A funding split under the program between the 21st Century Truck Partnership (21CTP) and the FreedomCAR Partnership is recommended as follows: 21CTP—\$7.0 million and FreedomCAR—\$17.9 million.

Advanced Combustion Engine R&D—Off-Highway Heavy Vehicle Engine R&D.—The off-highway engine program supports R&D efforts to minimize fuel economy penalties while meeting EPA Tier IV emissions requirements starting in 2008. Without major technological efforts, emission recipes will cause a significant increase in fuel use. While some technologies developed for on-road engines can be applied to off-road engines, manufacturers face unique off-road challenges, including the lack of cooling air flow to the engines, severe conditions of dust, debris, a wide range of altitude, temperature and vibrations. Off-road engines are applied to hundreds of different types of equipment in a wide range of industries, such as agriculture, construction and mining. The restricted space for accessories and engine components significantly limits emission compliance strategies. These unique requirements necessitate the development of new technologies to meet the demand of off-highway equipment. Progress has been made in developing combustion models to achieve in-cylinder emissions solutions. These have mitigated the fuel economy penalty for Tier III emissions engine designs. Continued funding of this initiative in 2007 is critical to achieving lower fuel consumption, system robustness and lower cost for Tier IV architectures. Cummins urges that \$3.5 million be appropriated for this program in fiscal year 2007.

Advanced Combustion Engines—Health Impacts.—The objective of this program is to expand the knowledge base relating to the health implications of emissions technologies being developed to meet energy efficiency goals. The Advanced Collaborative Emissions Study (ACES) is funded under this program. ACES is a cooperative effort between government (DOE, EPA) and industry (EMA, MECA, API) to assess health effects of emissions from 2007 compliant heavy-duty engines. The ACES program will include emissions characterization, chronic exposure animal bioassays, and identification of any unanticipated emissions or health effects from new engine technologies. Continuous monitoring of air toxics and source apportionment techniques are also proposed. Cummins urges that \$2.5 million be appropriated for this program in fiscal year 2007.

Office of FreedomCAR and Vehicle Technologies/Fuels Technologies

Non-Petroleum Based Fuels & Lubes: Heavy and Medium Duty Truck Programs (Natural Gas Vehicle).—This program funds development efforts for biomass and synthetic fuels as blending agents and natural gas engines for medium and heavy

trucks. The increase is requested to develop efficient techniques to remove water from biodiesel and No. 2 diesel fuel blends and complete ongoing natural gas engine development activities. Biodiesel fuel blends are becoming acceptable in the market place. Current fuel filters are less effective for separating emulsified water in such blends and are likely to cause problems in the field. Next generation natural gas combustion technologies can meet 2010 emissions, with simpler and more durable systems, and reduce fuel efficiency losses compared to diesel engines. Natural gas engines are practical in urban applications including school and city buses, and could significantly reduce exhaust emissions. Natural gas combustion, storage and infrastructure development also offers a bridge to the hydrogen economy. Cummins urges that \$8 million be appropriated for this program in fiscal year 2007.

Advanced Petroleum Based Fuels (APBF).—This important program supports the study of fuel properties that can enable engines to operate in the most efficient mode while meeting future emission standards. This activity is cross-cutting with the Advanced Combustion Engine program. The modeling and experimentation activities under this effort will include expertise and shared resources between DOE, engine manufacturers and energy companies. Engine companies are required to prove emissions compliance for over 435,000 miles of useful engine life. The goal of this program is also to study the impacts of fuel and lube oil sulfur content on durability and reliability of particulate aftertreatment systems. Cummins urges that \$4.5 million be appropriated for this program in fiscal year 2007.

Office of FreedomCAR and Vehicle Technologies/Materials Technologies

Propulsion Materials Technology—Heavy Vehicle Propulsion Materials Program.—This program supports research and development of next generation materials to enable diesel engine efficiency improvement, improved reliability and reduced aftertreatment system costs. Traditional engine materials may not be adequate for the next generation of advanced combustion concepts, such as Homogeneous Charge Compression Ignition (HCCI). High injection fuel systems are needed to support these technologies. Smaller clearances in the fuel system require new capabilities to remove submicron particles from the fuel. Aftertreatment NOx reduction technologies are not fully developed and particulate filters will be implemented in a large scale for the first time in 2007. These efforts may require further technology enhancements—lighter weight and higher strength materials are needed to obtain lighter, more robust and higher cylinder pressure engine systems for improvements in fuel consumption. Increased funding will support studies on a range of advanced materials technologies, including lightweight high strength engine components, composites, catalysts and soot oxidation, filtration media modeling and nano-fiber filter technologies. Cummins urges that \$5.9 million be appropriated for this program in fiscal year 2007.

Office of Hydrogen Technologies/Hydrogen Technologies

Transportation Fuel Cell Systems.—The program supports R&D and system integration of energy efficient auxiliary power unit technologies for mobile or off-road applications. The goal of this effort is to demonstrate a SOFC-based auxiliary power unit (APU) for Class 7/8 on-highway diesel trucks. Reduction of idling fuel consumption is widely recognized as an important element in reducing exhaust emissions from heavy trucks. It would also reduce our overall dependence on foreign oil. It is estimated that a reduction of up to 800 million gallons of diesel fuel is possible if SOFC systems can provide the hotel loads of truck fleets. In 2005, Cummins Power Generation and our partner, International Truck and Engine Company, conducted analysis and design work to accurately define the requirements for such an APU, and believe the goal is achievable. R&D work planned for 2007 includes the demonstration of a practical SOFC prototype, integrated on a typical truck platform. Cummins urges that the DOE request of \$7.5 million be appropriated for this program in fiscal year 2007.

ELECTRICITY DELIVERY AND ENERGY RELIABILITY

Research and Development/Distributed Energy

Distributed Generation Technology Development—Advanced Reciprocating Engine Systems (ARES).—The goals of this multi-year program are to develop high efficiency, low emissions and cost effective technologies for stationary natural gas systems between 500 to 6,500 kW by the year 2010. Natural gas-fueled reciprocating engine power plants are preferred for reliability, low operating costs and point of use power generation. Traditional natural gas engines are approximately 32 to 37 percent efficient and have not kept pace with the fuel efficiency of their diesel counterparts. Technologies sponsored by the ARES program have demonstrated 44 percent engine efficiency, higher power densities and an expected reduction in life cycle

costs and CO₂ emissions. Improved combustion, air handling and controls developments have been successfully implemented in a field test engine and genset for evaluation at a customer site. Further technical challenges include combustion development for system efficiency, NO_x reductions, advanced sensors and controls, hardware durability and lower life cycle costs. The development of point of use energy production supports national energy security needs, improved protection of critical infrastructure for homeland security concerns, and less dependence on the national electrical grid system. Cummins urges that \$12 million be appropriated for this program in fiscal year 2007.

FOSSIL ENERGY

Office of Fossil Energy/Coal and Other Power Systems/Distributed Generation Systems

Fuel Cells—Innovative Concepts—Solid State Energy Conversion Alliance (SECA).—The goal of the Solid State Energy Conversion Alliance (SECA) project is to develop a commercially viable 3 to 10 kW solid oxide fuel cell (SOFC) module for RV, commercial mobile, and telecommunications markets. The modular nature of SOFCs makes them adaptable to a wide variety of stationery and mobile applications. SOFCs can play a key role in securing the Nation's energy future by providing efficient, environmentally sound electrical energy from fossil fuels or hydrogen. Progress on Phase 1 of the program has been positive, including low cost "balance of plant" and essential control systems for achieving the cost targets. An advanced SOFC stack technology is planned. This is a 10-year program that combines the efforts of the DOE national laboratories, private industry, universities, and other research organizations. Federal funding is critical to support research needed to keep this technology moving from the laboratory to commercial viability. Cummins urges that the DOE request of \$75 million be appropriated for this program in fiscal year 2007.

Thank you for this opportunity to present our views on these programs which we believe are of great importance to the U.S. economy through viable transportation and power generation.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

The Federation of American Societies for Experimental Biology (FASEB) is a coalition of 22 independent scientific societies who together represent more than 84,000 biomedical research scientists. The mission of FASEB is to enhance the ability of biomedical and life scientists to improve, through their research, the health, well-being and productivity of all people. As your committee begins deliberations on appropriations for agencies under its jurisdiction, FASEB would like to offer its views on funding for the Department of Energy's Office of Science. In keeping with the "Energy Policy Act of 2005," FASEB recommends an appropriation of \$4.15 billion for the Department of Energy's Office of Science in fiscal year 2007.

The DOE's Office of Science supports research programs that enable the scientific discoveries and technological innovations that strengthen the U.S. economy and protect our citizens. Its research programs have led to discoveries of fundamental importance to the economy of the United States and to the improvement of the health of its citizens.

DOE is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of the total funding for this area of vital national importance. DOE funds fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science. The Office of Science is the Federal Government's largest single funding source for materials and chemical sciences. It supports unique and vital programs for U.S. research in climate change, geophysics, genomics, life sciences, and science education. This backing enables DOE to accomplish its missions in energy security, national security, and environmental restoration.

Each year the national laboratories are used by over 19,000 researchers from universities, other government agencies, and private industry. The emphasis on interdisciplinary research at these state-of-the-art facilities gives DOE a unique role, allowing it to support and extend basic research sponsored by other Federal agencies. Since its inception in 1977, 42 DOE funded scientists have won Nobel Prizes in Chemistry, Physics, Physiology or Medicine. DOE plays a fundamental role at the interface of different sciences and many research activities funded by non-DOE agencies could not take place in the absence of the highly specialized research infrastructure built and managed by DOE. Sustained support for the research programs

of DOE is vital to the welfare of the citizens of the United States and to the scientific enterprise.

DOE BASIC RESEARCH ENHANCES HEALTH AND WELL-BEING

Research conducted at DOE facilities has led to the development of products and technologies that have improved the quality of American life and given researchers better insight into perplexing health questions. The following examples of DOE research accomplishments have been selected from a list of more than 100 major success stories that can be found on DOE's web site: (http://www.science.doe.gov/sub/accomplishments/Decades_Discovery/decades.htm).

Human Genome Research

Genome scientists are beginning to unravel the deeper meaning of the genetic code through the help of DOE funded research. Scientists at Oak Ridge National Laboratory have combined advanced computer technology with their knowledge of biology to develop a software program called GRAIL (Gene Recognition Analysis Internet Link). GRAIL emulates the human learning process as it searches large areas of human DNA sequence to define the physical structures of genes and is currently being used in more than 1,000 biotechnology companies and laboratories to track down genes that play central roles in human diseases.

Lyme Disease

Lyme disease, a bacterial infection transmitted to humans through a tick bite, causes nerve damage, arthritis, and fever. Researchers at Brookhaven National Laboratory used intense X-rays at the National Synchrotron Light Source to solve the three-dimensional structure of a key surface protein from the bacterium that causes Lyme disease. This discovery has already led to the development of a rapid and highly accurate diagnostic test for the disease. Ongoing research at Brookhaven has the potential to further improve vaccines. DOE synchrotron facilities are essential tools in a high percentage of studies of the molecular structures of biological macromolecules.

X-Ray Microscopy Becomes a National Research Resource

X-rays have shorter wavelengths and higher energy than visible light. These properties enable scientists to use X-rays to image features in cells that are too small to be seen using optical microscopy and other types of imaging. The DOE National Research resource for X-ray microscopy enables biologists to study sub-cellular structures in bacteria as well as human cells, enhancing our understanding of basic molecular and cellular processes and how they relate to damage or repair to DNA, disease development, and protein interactions.

World's Largest Nuclear Magnetic Resonance Spectrometer

The world's largest, highest performance nuclear magnetic resonance (NMR) spectrometer is now operational at the William R. Wiley Environmental Molecular Sciences Laboratory. The 900-MHz NMR spectrometer allows scientists to conduct projects of large size or complexity that require the additional resolution and sensitivity that a 900 MHz field can provide. The very high magnetic field of this spectrometer makes it possible for scientists to determine the 3-dimensional structures of biological macromolecules with high resolution.

New DOE Design for Artificial Retina

The development of a pliable, biocompatible 60 electrode artificial retina containing advanced microelectronics has undergone successful in vitro and acute safety testing in animals. Long-term testing of the device in animals under the conditions that it will be used in human patients is ongoing. A Cooperative Research and Development Agreement created by DOE's artificial retina program with the Second Sight Corporation of California will facilitate the translation of DOE-supported advanced technology into devices that will satisfy FDA testing requirements for use in blind patients.

DOE Allocates Massive Supercomputer Resources to Drive Advances in Combustion, Astrophysics and Protein Structure Research

DOE has allocated 6.5 million hours of supercomputing time to three scientific research projects aimed at increasing our understanding of ways to reduce pollution, to gain greater insight into how stars and solar systems form, and advance our knowledge about how proteins express genetic information. As one of the Nation's leading agencies for advancing scientific research, the Energy Department is proud to be able to award these major allocations for studying complex scientific problems that can transform our energy future and boost scientific research. The researchers

will use their awards to compute on the IBM supercomputer at DOE's National Energy Research Scientific Computing (NERSC) Center in Berkeley, Calif. NERSC is the DOE Office of Science's flagship facility for unclassified supercomputing. The three awards amount to 15 percent of NERSC's annual computing resources.

ADVANCING SOLUTIONS TO ENERGY AND ENVIRONMENTAL CONCERNS

Research funded by DOE is advancing solutions to current environmental problems, including the cleaning of toxic waste and reduction of harmful fuel emissions. Research into alternative fuels will help conserve energy, reduce the need for petroleum, and provide environmentally sustainable solutions to our energy needs. DOE research programs will lead to more cost efficient energy products with fewer harmful effects on our environment and reduced dependence on foreign oil. The following examples highlight contributions of research supported by DOE.

DOE Publishes Roadmap for New Biological Research for Energy and Environmental Needs

The DOE Genomics: Genomes to Life (GTL) Roadmap outlines a plan to explore the unseen world of microbes—starting with information encoded in their DNA sequences—to produce the new science needed for achieving cleaner and more secure energy resources, remediating toxic wastes and understanding the natural roles microbes play in the global climate. The 2005 GTL Roadmap builds on and expands the GTL research program begun in 2002. Scientific and technological progress achieved during the Human Genome Project, initiated by DOE in 1986, and the Microbial Genome Program, begun in 1994, provided the foundation for establishing the GTL program.

Mobilizing Microbes to Manage Waste

Recently, DOE-funded scientists have determined the DNA sequence of the genome of an organism that may be used to clean environmental contaminants. *Geobacter sulfurreducens*, a microbe commonly found in contaminated subsurface environments, can remove radionuclides and metals, including uranium, from groundwater. Researchers have found that the enrichment of groundwater samples with *Geobacter sulfurreducens* decreased uranium concentrations below the prescribed treatment level in some wells. Because this organism can be cultivated by adding simple carbon sources such as acetate to the groundwater, it may offer an inexpensive and simple way to remove environmental contaminants that pose a threat to humans.

Creating Renewable Energy Sources

The majority of U.S. energy is currently derived from fossil fuels. However, because fossil fuel reserves are finite and their continued use contributes to global warming by emitting substantial CO₂, it is essential to develop more sustainable energy sources. Biomass, or plant-derived, energy offers an appealing alternative to fossil fuels. Plant products are renewable and they have the potential to substantially reduce atmospheric CO₂ accumulation. By combining experimental biology with advanced computing, DOE's Genomes to Life program seeks to employ microbes to increase the production of biomass feed stocks, thereby reducing reliance on fossil fuels, decreasing CO₂ emission, and curbing global warming.

Reducing Our Dependence on Foreign Oil

DOE research is making it possible to create economically valuable products by modifying plants and microbes. By transferring genes from certain bacteria to plants, researchers at Michigan State University were able to create plants that synthesized biodegradable plastics. These plant products have the potential to replace plastics that are now derived from petroleum. DOE-funded researchers have also streamlined the process of converting cellulose to ethanol and made it possible to alter bacterial DNA to modify their production of ethanol and promote ethanol production in bacteria that do not normally create it. This work has important implications for meeting our Nation's energy needs and reducing U.S. reliance on foreign oil.

Increasing Fuel Efficiency

The recent rise in fuel prices underscores the importance of creating more fuel-efficient motor vehicles. Scientists in DOE's Materials Sciences and Engineering subprogram, a research program dedicated to finding economically feasible ways to increase materials performance, have contributed to boosting the fuel economy of automobiles. They have developed stronger, lighter weight materials that could increase vehicle efficiency by reducing vehicle weight; their study of alloys and ceramics has led to the creation of materials that retain their strength at high tempera-

tures. These materials could potentially be used to increase the efficiency of the combustion engine.

FUNDING RECOMMENDATION

The unique, interdisciplinary expertise and unparalleled research facilities of the Office of Science merit significantly increased funding. With this support, the Office of Science will be able to continue to attack major scientific challenges of fundamental importance to the security and well-being of our Nation. A significant increase in DOE funding is essential to ensure the development of necessary collaborations among physical, chemical, engineering, and biological scientists and to preserve the vitality of our national research enterprise. In keeping with the "Energy Policy Act of 2005," FASEB recommends an appropriation of \$4.15 billion for the Department of Energy's Office of Science in fiscal year 2007.

PREPARED STATEMENT OF THE DISTRIBUTED ENERGY COALITION

Distributed Energy Coalition.—The DE Coalition brings together the undersigned manufacturers, utilities, propane companies, industry, State agencies, and others who firmly believe that the Federal Government is an essential partner in the transformation of our electric infrastructure to a more secure, flexible, efficient and growth-oriented energy resource for the 21st century. Distributed Energy is an indispensable element of this transformation, one that provides near term solutions with significant positive long-term implications. The Coalition believes that DE technologies can demonstrate their value and achieve full market readiness and recognition only with Federal leadership and support. Industry stands ready to invest their portion of the necessary resources in partnership with this Federal leadership. Private industry investment already exceeds and will ultimately be much greater than this modest request to have DOE "stay the course" with its current level of research, development and demonstration funding, but these programs cannot be duplicated by the private sector.

The Challenge: Following-Through on Distributed Energy.—The reliability and security of the Nation's energy infrastructure is approaching a crisis situation; our continued prosperity is directly linked to secure, reliable, and affordable energy. Fossil fuels are increasingly globally traded commodities, facing ever-increasing global demand. Electricity supplies are becoming strained in certain areas of the country as economic development outpaces expansion. Other regions face constraints on the ability to deliver power to where it's needed when it's needed. The vulnerabilities of our energy infrastructure were highlighted when the Great Lakes and Northeast regions lost power in August 2003 and when hurricanes Katrina and Rita struck the Gulf Coast in September 2005. And the possibility of terrorist attacks on central station power plants and on critical transmission and distribution facilities remains a major concern.

Recognizing that a key element of a sensible response to this national crisis is the development and deployment of Distributed Energy (DE) systems, Congress included in the Energy Policy Act of 2005 a number of provisions authorizing increased Federal focus on distributed energy research, development, demonstration and policy support, including authorization of \$730 million for DE over the next 3 years. The President enthusiastically signed EAct05 into law. Congress and the President, with these actions, clearly reaffirmed the critical role DE can play in enhancing the efficiency, reliability, security and flexibility of the Nation's energy infrastructure through solutions applied at the local level.

What's Needed to Ensure Success.—Despite a very tough budget climate, the Federal Government must now align its policy objectives with a sustained commitment to invest in the Distributed Energy programs that will provide these solutions. At a minimum, Congress must act to maintain dedicated funding in the Department of Energy's DE program within the Office of Electricity Delivery and Energy Reliability at a level consistent with prior years by appropriating \$60 million for fiscal year 2007. The three key focus areas of RD&D need are:

- Alternative Energy Networks and Disaster Response.*—Develop long-term energy solutions to the Nation's rapidly expanding need for reliable, secure, and efficient energy through the integration of loads and DE sources into local energy networks and microgrids.
- Advances in DE Technologies and Systems.*—Complete the technology development for the diverse array of DE systems that support grid enhancement.
- Outreach and Technology Transfer at the Local Level.*—Ensure maximum impact through technology transfer to local implementers, including those responsible for policies, codes, and standards.

Benefits of the DE Program.—Distributed Energy includes technologies and systems¹ that, at the point of use, efficiently produce electricity, recycle waste heat, and store energy. DE supports and supplements the existing power generation and transmission infrastructure, and provides critical societal benefits including:

- Energy Reliability and Quality.*—DE systems can operate in parallel with the grid to provide enhanced power reliability without new transmission or distribution infrastructure. DE technologies deliver the high quality power required of our digital economy.
- Energy Security.*—DE systems can operate independently of the grid to sustain critical services (e.g. healthcare, communications, shelter, public safety) after natural or man-made disasters.
- Energy Efficiency.*—DE systems can recycle waste energy and put it to productive use for heating and cooling, increasing fuel utilization efficiency compared to central power and increasing customer benefit from each cubic foot of natural gas or propane consumed.
- Environmental Stewardship.*—Use of efficient DE technologies decreases emission of criteria pollutants (NO_x/CO) and greenhouse gases. DE can use local, renewable fuels (e.g. landfill gas) to provide electrical and thermal energy.
- Economic Development.*—DE directly relieves grid congestion and provides power not only to remote sites but to any constrained area, avoiding investment for new grid wires in cities and beyond the “end of the line.”

Energy market forces do not assign full value to recognized but externalized DE benefits such as reduced pollution, enhanced energy efficiency, improved productivity, and reduced infrastructure costs. In fact, today’s market provides disincentives for local distributed energy systems, technologies, equipment and business models. The above-described public benefits warrant public support of DE technologies; a modest amount of public funding can leverage large amounts of private resources by demonstrating value in the market and reducing artificial barriers to deployment in industrial, commercial, and residential applications.

America’s DE Public/Private Partnership is a Success . . . So Far.—The Department of Energy described the goal of the Distributed Energy (DE) Program as: “[b]y 2015, the Distributed Energy Resources Program will develop and deploy a diverse array of high efficiency integrated distributed generation and thermal energy technologies at market competitive prices so that homes, businesses, industry, communities, and electricity companies elect to use them.” DOE’s leadership of this public/private partnership has brought us through the initial stages of component development and system integration. However, this is just a beginning. The accomplishments of the DOE/DE program to-date include:

- The initial development phases of advanced prime movers—gas turbines, micro-turbines, and reciprocating engines—that are more efficient, less polluting, and more affordable.
- Adaptation of thermal technologies to recycle waste energy to cool, heat, and de-humidify business spaces and industrial processes.
- First generation packaged DE systems of integrated prime movers and thermal components that are designed to operate safely, reliably, and efficiently without additional onsite engineering.
- The establishment of eight Regional Application Centers, covering all 50 States, that provide local guidance, tools, and training to successfully apply DE.

Next Steps for DE to Achieve DOE’s 2015 Goals.—DOE must maintain its leadership of this public/private partnership in order to achieve the goal of a diverse array of DE solutions that enhance the grid in an affordable and environmentally-friendly manner. Only with Federal leadership and support can DE technologies demonstrate their value and achieve full market readiness and recognition. Achieving this goal maximizes the public benefits of DE.

Industry stands ready to invest their portion of the necessary resources in partnership with the Office of Electricity Delivery and Energy Reliability’s leadership to develop advanced technologies, break down barriers and realize our common goals. When balancing budgets under critical times like these, industry recognizes the need to prioritize and focus government support. The DE Coalition represents over 1 million workers, holding jobs in every State, seeking to support the Nation’s electric grid with efficient local energy solutions that can withstand hurricanes and ice storms, secure critical needs during power disruptions or terrorist attack, and

¹ DE technologies and systems include high efficiency reciprocating engines; microturbines; industrial gas turbines; fuel cells; thermally activated technologies such as steam turbines, absorption chillers and desiccants; advanced storage systems; control systems; and integrated systems that incorporate advanced components into highly efficient packages for heating, cooling, and useful energy.

conserve energy supplies by efficient generation close to the point of use as well as recycling local energy that is otherwise wasted. Our request is simple: stay the course and maintain research, development and demonstration funding for the Department of Energy's, Office of Electricity Delivery and Energy Reliability DE program.

This is a 10-year program that combines the efforts of the DOE national laboratories, private industry, universities, and other research organizations.

The Distributed Energy Coalition urges that \$35 million be appropriated for the Distributed Energy Technology Research program in fiscal year 2007. The Distributed Energy Technology Research program improves the energy and environmental performance of distributed technologies (turbines, microturbines, engines, desiccants, chillers, and heat exchangers) so that the Nation can have more energy choices to achieve a more flexible and smarter energy system.

The Distributed Energy Coalition urges that \$25 million be appropriated for the System Integration and Cooling, Heating and Power (CHP) program in fiscal year 2007. The System Integration and Cooling, Heating, Power (CHP) activity develops highly-efficient integrated energy systems that can be replicated across end-use sectors which will help demonstrate an R&D objective or address a technical barrier. The activities integrate power producing prime movers that generate heat and utilize it for domestic hot water, steam, and/or thermally activated technologies that drive absorption chillers and/or desiccant units. These systems will reduce energy costs and emissions by using energy resources more efficiently.

Thank you for this opportunity to present our views on this program which we believe is of great importance to the U.S. economy through viable on-site power generation solutions.

The Distributed Energy Coalition companies that support this testimony are: ACEEE; Aegis Energy Services, Inc.; Allegiance Energy Systems, LLC.; Association of State Energy Research and Technical Transfer Institutions (ASERTTI); Atlantic Energy Services; Avalon Consulting, Inc.; BroadUSA; Burns & McDonnell; Capstone Turbine Corp.; Caterpillar Inc.; Cinergy Solutions; Climate Energy, Inc.; Cummins Power Generation; Cummins Power Generation Project Company; DG Power Systems, Inc.; Discovery Insights LLC; Elliott Energy Systems; Enercon Engineering; Energy and Environmental Analysis, Inc.; Energy Solution Center; Energy Spectrum Developers, LLC; Environmental Business Association of NY State; EXERGY Partners Corp.; Gas Technology Institute; Gas Turbine Association; Greenta.com; Infinia Corporation; Ingersoll-Rand; International District Energy Association (IDEA)—represents nearly 700 company and university members who operate district energy systems in 38 of the 50 United States; Maine State Energy Program; National City Energy Capital; National Fuel Gas Distribution Corporation; National Propane Gas Association—3,500 companies in all 50 States and 38 affiliated State or regional associations, representing every segment of the propane industry; Northeast Combined Heat and Power Association; NiSource Energy Technologies; North Carolina Solar Center; North East Midwest Institute; Northern Power Systems; Pace Energy Project; Power Equipment Associates; Primary Energy Ventures; Redwood Power Company, Inc.; Rensselaer Polytechnic Institute—Future Energy Systems Center; Resource Dynamics Corp.; Sacramento Municipal Utility District; Siemens Power Generation, Inc.; Solar Turbines, Inc.; Southern California Gas Company; Southwest Gas Company; Spectra Environmental Group Inc. & Spectra Engineering, PC; Steven Winter Associates; Sustainable Resources Group; Turbosteam Corporation; TVC Systems; United States Combined Heat and Power Association; UTC Power (a business unit of United Technologies, Inc.); University of Illinois at Chicago; Waukesha Engine Division; Woolpert, Inc.

PREPARED STATEMENT OF THE STATE TEACHERS' RETIREMENT SYSTEM, STATE OF CALIFORNIA

Summary

Acting pursuant to Congressional mandate, and in order to maximize the revenues for the Federal taxpayer from the sale of the Elk Hills Naval Petroleum Reserve by removing the cloud of the State of California's claims, the Federal Government reached a settlement with the State in advance of the sale. The State waived its rights to the Reserve in exchange for fair compensation in installments stretched out over an extended period of time.

Following the settlement, the sale of the Elk Hills Reserve went forward without the cloud of the State's claims and produced a winning bid of \$3.53 billion, far beyond most expectations. Under the terms of the Settlement Agreement between the Federal Government and the State, the State is to receive a 9 percent share of the

sales proceeds as compensation for its claims in installments. Each annual installment of compensation is subject to a Congressional appropriation. For each of the past 7 fiscal years, Congress has appropriated the annual installments of Elk Hills compensation for the State as called for under the Settlement Agreement.

The State respectfully requests an appropriation of at least \$9.7 million in the subcommittee's bill for fiscal year 2007, in order to meet the Federal Government's obligations to the State under the Settlement Agreement. The Elk Hills appropriation has the broad bipartisan support of the California House delegation.

Background

Upon admission to the Union, States beginning with Ohio and those westward were granted by Congress certain sections of public land located within the State's borders. This was done to compensate these States having large amounts of public lands within their borders for revenues lost from the inability to tax public lands as well as to support public education. Two of the tracts of State school lands granted by Congress to California at the time of its admission to the Union were located in what later became the Elk Hills Naval Petroleum Reserve.

The State of California applies the revenues from its State school lands to assist retired teachers whose pensions have been most seriously eroded by inflation. California teachers are ineligible for Social Security and often must rely on this State pension as the principal source of retirement income. Typically the retirees receiving these State school lands revenues are single women more than 75 years old whose relatively modest pensions have lost as much as half or more of their original value to inflation.

State's Claims Settled, as Congress Had Directed

In the National Defense Authorization Act for Fiscal Year 1996 (Public Law 104-106) that mandated the sale of the Elk Hills Reserve to private industry, Congress reserved 9 percent of the net sales proceeds in an escrow fund to provide compensation to California for its claims to the State school lands located in the Reserve.

In addition, in the Act Congress directed the Secretary of Energy on behalf of the Federal Government to "offer to settle all claims of the State of California . . . in order to provide proper compensation for the State's claims." (Public Law 104-106, § 3415). The Secretary was required by Congress to "base the amount of the offered settlement payment from the contingent fund on the fair value for the State's claims, including the mineral estate, not to exceed the amount reserved in the contingent fund." (Id.)

Over the year that followed enactment of the Defense Authorization Act mandating the sale of Elk Hills, the Federal Government and the State engaged in vigorous and extended negotiations over a possible settlement. Finally, on October 10, 1996 a settlement was reached, and a written Settlement Agreement was entered into between the United States and the State, signed by the Secretary of Energy and the Governor of California, under which the State would receive 9 percent of the sales proceeds in annual installments over an extended period.

The Settlement Agreement is fair to both sides, providing proper compensation to the State and its teachers for their State school lands and enabling the Federal Government to maximize the sales revenues realized for the Federal taxpayer by removing the threat of the State's claims in advance of the sale.

Federal Revenues Maximized by Removing Cloud of State's Claim in Advance of the Sale

The State entered into a binding waiver of rights against the purchaser in advance of the bidding for Elk Hills by private purchasers, thereby removing the cloud over title being offered to the purchaser, prohibiting the State from enjoining or otherwise interfering with the sale, and removing the purchaser's exposure to treble damages for conversion under State law. In addition, the State waived equitable claims to revenues from production for periods prior to the sale. The Reserve thereafter was sold for a winning bid of \$3.53 billion in cash, a sales price that substantially exceeded earlier estimates.

The Money Is There to Pay the State

The funds necessary to compensate the State have been collected from the sales proceeds remitted by the private purchaser of Elk Hills and are now being held in the Elk Hills School Lands Fund for the express purpose of compensating the State. Taking into account the 1 percent government-wide rescission in the fiscal year 2006 Defense Appropriations Act, the Elk Hills School Lands Fund should have a positive balance of at least \$18.18 million.

Congress Should Appropriate \$9.7 Million for the Fiscal Year 2007 Installment of Elk Hills Compensation

As noted above, the State's 9 percent share of the adjusted Elk Hills sales price of \$3.53 billion is \$317.70 million. To date, Congress has appropriated seven installments of \$36 million and one installment of \$48 million that was reduced to \$47.52 million by the 1 percent across-the-board rescission under the fiscal year 2006 Defense Appropriations Act, for total appropriations to date of \$299.52 million of Elk Hills compensation owed to the State. Accordingly, the Elk Hills School Lands Fund should have a positive balance of at least \$18.18 million.

The State recognizes that although the equity finalization process to determine the final split of the sales proceeds between the Federal Government and ChevronTexaco, as the selling co-owners of the Elk Hills field, is in its final stages after some 8 years, the process still has not been fully completed. DoE has calculated that under the worst case scenario for the Federal Government based on the current status of the equity finalization, the State's share would fall by a total of \$6.03 million. The State has agreed to a "hold-back" of that amount to protect the Federal Government's interest and is not seeking an appropriation of that amount for fiscal year 2007. This reduces the available balance in the Elk Hills School Lands Fund to \$12.15 million.

The other factor affecting the total amount of the State's compensation is its share of the direct expenses that had been incurred to conduct the sale of the Elk Hills field back in February 1998. This is an issue entirely independent of and unaffected by the resolution of the equity finalization split just discussed above. The Settlement Agreement provides that the Federal Government shall pay the State "9 percent of the proceeds from the sale of the Federal Elk Hills Interests that remain after deducting from the sales proceeds the costs incurred to conduct such sale." This reflects the Congressional direction that, "In exchange for relinquishing its claim, the State will receive 7 [9 in the final legislation] percent of the gross sales proceeds from the sale of the Reserve that remain after the direct expenses of the sale are taken into account." (House Rept. No. 104-131, Defense Authorization Act for Fiscal Year 1996, Public Law 104-106).

The State agrees that the \$27.13 million incurred for appraisals, accounting expenses, reserves report, and brokers' commission are appropriate sales expenses. (See Letter of the California Attorney General to DoE, dated February 10, 2005 (attached)). Accordingly, the State's 9 percent share of these proper sales expenses reduces the available balance of the Elk Hills School Lands Fund by \$2.44 million to \$9.7 million.

Costs of conducting the equity adjustment are properly viewed as ongoing costs incurred due to the joint operation of the Elk Hills oil field by the Federal Government and ChevronTexaco, since the equity adjustment already was required under their joint operating agreement and related to pre-sale production revenues. Similarly, costs of environmental remediation of the Elk Hills field was a cost attributable to the prior operation of the field, which created any environmental problems that exist. That such environmental remediation relates to the ongoing operation of the oil field is underscored by the fact that the Federal Government is currently engaged in the phased environmental remediation of a Naval Petroleum Reserve that it is not selling—NPR-3 (Teapot Dome), as evidenced by its fiscal year 2006 budget request. Accordingly, the costs of the equity adjustment and environmental remediation are not properly treated as direct costs incurred to conduct the sale of the Elk Hills field back in February 1998 and should not be charged to the State's compensation.

CONCLUSION

Therefore, of the current Elk Hills School Lands Fund balance of \$18.18 million, taking into account the "hold-back" for worst case scenario under equity finalization and deducting the appropriate direct costs of conducting the sale, the State respectfully requests the appropriation of at least \$9.7 million for Elk Hills compensation in the subcommittee's bill for the fiscal year 2007 installment of compensation, in order to meet the Federal Government's obligations to the State under the Settlement Agreement.

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM), the largest single life science organization in the world, with more than 43,000 members, appreciates the opportunity to provide written testimony on the administration's fiscal year 2007 budget proposal for the Department of Energy (DOE) science programs. The ASM mission is

to enhance microbiology, to gain a better understanding of basic life processes, and to promote the application of this knowledge to improve health, economic, and environmental well-being.

The DOE supports microbiological research through programs involving microbial genomics, climate change, bioremediation, and analyses of basic biological processes important in the search for alternative energy sources. The ASM commends and supports the administration's recommended 14 percent increase for a total of \$4.1 billion for the DOE Office of Science. The DOE Office of Science is one of the three priority agencies in the President's American Competitiveness Initiative (ACI), which supports a wide range of research and development related to scientific innovation.

STRONG SUPPORT IS NEEDED FOR THE DOE OFFICE OF SCIENCE

Scientific progress and the U.S. economy continue to benefit from investments in basic sciences made by the DOE Office of Science. The DOE Office of Science, the Nation's primary source of support for research in the physical sciences, is also an essential partner in several critical areas of biology and environmental science as well as in mathematics, computing, and engineering. Furthermore, the Office of Science supports a unique system of programs based on large-scale, specialized user facilities that bring together teams of scientists focused on such challenges as global warming, genomic sequencing, and energy research. The Office of Science is also an invaluable partner with the National Institutes of Health (NIH) and the National Science Foundation (NSF) through its support for several important interdisciplinary research efforts. The Office of Science also supports peer-reviewed, basic research at universities and colleges across the United States in science areas relevant to the DOE. These programs contribute to the knowledge base and training of the next generation of scientists.

The Office of Science will play an important role in the American Competitiveness Initiative, which seeks to double Federal spending in the sciences during the next decade. In particular, the Federal Advanced Energy Initiative aims to reduce American dependence on imported energy resources. Many of the DOE scientific research programs share the goal of producing and conserving energy in environmentally responsible ways. These programs include basic research projects in microbiology as well as extensive development of biotechnology-based systems to produce alternative fuels and chemicals from biomass, to recover and improve processes for refining fossil fuels, to remediate environmental problems, and to reduce wastes and pollution. Our Nation's future competitiveness and innovation capabilities rely inclusively on all basic sciences and technologies.

The administration's proposed budget for fiscal year 2007 requests \$4.1 billion for the Office of Science. The ASM recommends that Congress support the proposed budget of \$4.1 billion for the DOE Office of Science in the fiscal year 2007 appropriation, an increase of \$505 million over fiscal year 2006.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH (BER) PROGRAMS

The proposed budget for the base programs of the Biological and Environmental Research (BER) program in fiscal year 2007 is \$510 million, a \$59 million increase over fiscal year 2006. For over 50 years, the BER program has been advancing environmental and biomedical knowledge that promotes national security through improved energy production, development, and use; international scientific leadership that underpins our Nation's technological advances; and research that improves the quality of life for all Americans.

BER GENOMICS: GTL PROGRAM

The DOE is the lead Federal agency supporting genomic sequencing of non-pathogenic microbes through its Genomics: GTL Program. The sequence information being compiled through this program provides knowledge into how to design biotechnology-based processes that will function in extreme conditions and could potentially address national priorities, such as energy and environmental security, bioremediation of waste sites, global warming and climate change, and energy production. Microbes power global carbon and nitrogen cycles, clean up wastes, and transform energy. They are an important source of biotechnology products, making the DOE research programs extremely valuable for advancing our knowledge of the non-medical microbial world. Knowing the complete DNA sequence of a microbe provides important clues about the biological capabilities of the organism and is an important step toward developing strategies for efficiently detecting, using, or reengineering particular microbes to address key national energy and environmental issues. The DOE Genomics: GTL genomic sequencing program has an important impact on

nearly every other activity within BER. ASM supports the administration's request of \$135 million for the Genomics: GTL program in fiscal year 2007, a \$50 million increase over fiscal year 2006.

In addition to this program, a substantial portion of the analytic capacity within the DOE Joint Genome Institute (JGI) continues to be devoted to the sequencing of individual microbial genomes as well as the DNA in mixtures from microbial communities dwelling within specialized ecological niches. As part of these efforts, the DOE continues to analyze complete DNA sequences of genomes in microbes with potential uses in energy, waste cleanup, and carbon sequestration.

About 40 percent of the JGI capacity is dedicated to serving the DOE's direct needs, primarily through the Genomics: GTL program, while the remaining 60 percent of this capacity serves as a state-of-the-art DNA sequencing facility for scientists who submit proposals subject to merit review. These sequencing projects will be conducted at no additional cost for the wider scientific community and are expected to have a substantial impact on the BER Environmental Remediation Sciences program, with much of this program focused on using microbes to cleanup environmental sites. In addition, the Genomics: GTL program will continue to have a major impact on the BER Climate Change Research program because of the role microbes play in the global carbon cycle and the potential for developing biology-based processes for sequestering carbon.

The ASM supports the administration's request for \$62 million to continue supporting the Joint Genome Institute program in fiscal year 2007. The ASM applauds the DOE's leadership in recognizing this important need in science and endorses expanding these microbial genome sequencing efforts, particularly to learn more about the functions and roles of the many microorganisms that resist efforts to be grown in culture. This program provides a basis for using genomic information more broadly to understand life at the cellular and at even more complex levels.

ENVIRONMENTAL REMEDIATION

The overall goal of the DOE Environmental Remediation subprogram (ER) is to support research that improves the science underpinning the cleanup of the DOE's sites and to support related operations. Because traditional cleanup strategies may not work or be cost effective, the ER subprogram supports basic research that aims to develop and validate technical solutions to these complex remediation problems. The goal is to develop innovative new remediation technologies that reduce risks and provide savings in costs and time. The ASM supports the administration's request for nearly \$97.2 million for the Environmental Remediation subprogram in fiscal year 2007. The DOE environmental remediation programs deserve sustained support.

CLIMATE CHANGE RESEARCH

Although the ASM is pleased to see that the administration is continuing to support Climate Change Research in its fiscal year 2007 budget, the proposed budget of nearly \$135 million for this important activity is a \$6.5 million decrease from fiscal year 2006. The Climate Change Research subprogram seeks to apply the latest scientific knowledge to the potential effects of greenhouse gas and aerosol emissions on the climate and the environment. This program is the DOE's contribution to the interagency U.S. Global Change Research Program proposed by President Bush in 1989 and codified by Congress in the Global Change Research Act of 1990 (Public Law 101-106).

The Ecological Processes portion of this subprogram is focused on understanding and simulating the effects of climate and atmospheric changes on ecosystems. Research will also identify potential feedbacks from changes in the climate and atmospheric composition. This research is critical to better understanding of the changes occurring in ecosystems from increasing levels of atmospheric pollutants. This program is vital to advance understanding of energy balances between the surface of the Earth and the atmosphere and how this will affect the planet's climate and ecosystems. The ASM recommends continued support for important Climate Change research within the DOE Office of Science.

BASIC ENERGY SCIENCES

The administration request for the Office of Basic Energy Sciences (BES) for fiscal year 2007 is \$1.4 billion, an increase of \$28.6 million over fiscal year 2006. The ASM is concerned with BES's efforts to move away from energy biosciences research. This program is a principal sponsor of fundamental research for the Nation in the areas of materials sciences, chemistry, geosciences, and biosciences as they relate to energy. The program supports initiatives in the microbiological and plant sciences fo-

cused on harvesting and converting energy from sunlight into feedstocks such as cellulose and other products of photosynthesis, as well as how those chemicals may be further converted into energy-rich molecules such as methane, hydrogen, and ethanol. Alternative and renewable energy sources are of strategic importance to the U.S. energy portfolio, and the DOE is advancing basic research in this critical area. Genomic technologies are a tremendous new resource for further advancing the DOE's bioenergy goals.

NEW TECHNOLOGIES AND UNIQUE FACILITIES

New technologies and advanced instrumentation derived from the DOE's expertise in the physical sciences and engineering have become increasingly valuable to biologists. Beam lines at the DOE's facilities and other advanced technologies for determining molecular structures of cell components are advancing our understanding of cell functions and are being applied to new drug design. The DOE advances in areas such as high-throughput, low-cost DNA sequencing, mass spectrometry, cell imaging, and computational analyses of biological molecules and processes are critical to our national biological research enterprise. The ASM supports recommended funding of \$15 million for infrastructure development of research user facilities under BER.

The DOE has unique field research facilities for conducting environmental research that is important for understanding biogeochemical cycles and global change, and for restoring environmental sites. The DOE's ability to conduct large-scale science projects and to draw on physics, mathematics and the computer sciences, and engineering is also critical for biological research.

CONCLUSION

The ASM supports the recommended 14 percent increase for a total of \$4.102 billion for the DOE Office of Science in fiscal year 2007, and recommends strong support for the DOE BER programs.

The ASM appreciates the opportunity to provide written testimony and would be pleased to assist the subcommittee as it considers the fiscal year 2007 appropriation for the DOE.

PREPARED STATEMENT OF THE GAS MACHINERY RESEARCH COUNCIL

Mr. Chairman and members of the subcommittee, we appreciate the opportunity to provide testimony in support of the DOE Natural Gas Infrastructure Program and the fiscal year 2007 budget. We are concerned that no funds were allotted for this program in fiscal year 2006 and request support of this program in fiscal year 2007 in the amount of \$25 million.

The Gas Machinery Research Council (GMRC) provides its member companies and the natural gas industry with the benefits of an applied research and technology program directed toward improving the reliability and cost effectiveness of the design, construction, and operation of mechanical and fluid systems. Membership includes 70 companies involved in all aspects of natural gas compression, including all major natural gas pipelines, production companies, packagers, and service companies.

The first generation compression infrastructure in the 1920's and 1930's consisted of many small slow-speed compressors to move gas from producing regions to markets. To provide the necessary expansion of these early pipeline systems in the decades after World War II, a second generation of larger and higher-speed machines promised a significant reduction in installed cost. As these compressors were installed, they experienced many reliability and operational problems. To address this challenge, in 1952 the pipeline industry formed what is now the Gas Machinery Research Council. Through research done at Southwest Research Institute (SwRI), an Analog Simulator was developed to optimize the design of pulsation filter bottles and predict pulsation performance. This design service has been operating continuously since 1955, bringing pulsation problems under control.

In recent years the promise of dramatic cost reductions has driven the industry towards even higher-speed, larger horsepower reciprocating compression powered by modern gas engines or large electric motors. With this new technology came new challenges. The industry now faces a technology transition similar to 50 years ago.

The last generation of slow-speed machines is no longer commercially available because they are perceived as unaffordable. While affordable, the current generation of high-horsepower, high-speed compression requires advancements in technology to meet their full potential to address the pipeline industry's compression needs.

In fiscal year 2005, GMRC began the Advanced Reciprocating Compression Technology (ARCT) project under the DOE Natural Gas Infrastructure Program. The objective of the ARCT project was to develop the next generation of compression technology to enhance the efficiency, reliability and integrity of pipeline operations through improved compression. The suite of technologies developed during this program would provide pipeline operators with improved and affordable choices for new compression and products that can be retrofitted to existing machines. These retrofits would reduce the amount of fuel consumed to move gas from the producer to market and reduce emissions, resulting in savings for both the industry and the consumer.

We are continuing aspects of this program using industry funds, but at greatly reduced levels. A resumption of the DOE partnership would allow these technologies to be brought to the market place and to the benefit of gas consumers far earlier.

Natural Gas will continue to be a major source of worldwide energy as energy usage increases in the future. The majority of this increase will be provided by fossil fuels with the natural gas share increasing because of its worldwide availability and clean combustion characteristics. Currently, the U.S. domestic production of natural gas accounts for over 90 percent of our needs, whereas we import 65 percent of our oil needs. Maintaining the country's natural gas independence is vital to our security and will allow the United States to continue to provide world leadership in the development and application of new natural gas technologies. A joint industry/government research and development program can ensure that the industry infrastructure is in place for years to come.

The 70 member companies of GMRC strongly support the DOE Natural Gas Infrastructure Program and urge you to re-establish the program funding in fiscal year 2007 in the amount of \$25 million. This will allow development and implementation of technologies critical to infrastructure needs.

We thank you for your consideration of these funding requests.

PREPARED STATEMENT OF FUELCELL ENERGY, INC.

FuelCell Energy appreciates the opportunity to submit this statement in support of the Department of Energy's Fossil Energy, Fuels and Power Systems, Fuel Cell Program. We urge the subcommittee to continue to support this breakthrough program by appropriating \$75 million for development of this highly efficient, clean, and secure energy technology.

DOE's Fossil Energy Fuel Cell Program, through the Solid State Energy Conversion Alliance (SECA) fuel cell and fuel cell hybrid activity, is developing technology to allow the generation of highly efficient, cost-effective, carbon-free electricity from domestic coal resources with near-zero atmospheric emissions in central station applications. The program directly supports the President's FutureGen project through the development of cost-effective, highly efficient, power blocks that facilitate sequestration in coal-based systems. The technology will also permit grid independent distributed generation applications by 2010.

SECA fuel cell/turbine hybrids operating on coal gas are building blocks for zero emissions power, the ultimate goal of the President's FutureGen Program. These hybrids are projected to be available at a cost of \$400/kW, a 10-fold reduction in cost from existing fuel cell technology. In addition the technology developed in this program will produce electricity at up to 60 percent in coal-based systems, produce near-zero emissions, and be compatible with carbon sequestration.

In all applications SECA fuel cells will be both low-cost, with the above-stated goals of \$400/kW, as well as highly efficient. Integrated with coal gasification, such systems will approach 60 percent efficiency compared to the existing coal-based power generation fleet average of about 33 percent efficiency. In distributed generation applications even higher efficiencies may be reached, and cogeneration opportunities can further increase efficiency.

Along with these attributes fuel cells are one of the cleanest technologies available in terms of atmospheric emissions, which enhances their attractiveness for urban applications or applications in areas of non-attainment for Clean Air Act emissions. They also provide 24-hour, silent operation.

Finally, coal-based fuel cell systems will increase energy security by using domestic resources. In distributed generation applications fuel cells can eliminate transmission and distribution system infrastructure concerns and issues by providing generation near the point of use and by being able to operate in a grid-independent mode.

The SECA Program consists of six integrated industrial manufacturing teams designing fuel cell or fuel cell/hybrid systems, developing the necessary materials, and

ultimately responsible for deploying the technology. These teams are complemented by two to three dozen core technology performers providing generic problem-solving research needed to overcome barriers to low-cost, high-performance technology as identified by DOE and the manufacturing teams. The core technology teams are universities, national laboratories, and other research-oriented organizations. Historically the manufacturing teams receive 60 percent of the program funding and the core technology developers receive 40 percent. This unique structure assures that a variety of approaches to solving the problems associated with fuel cells will be undertaken in a manner that will increase the chances of success for this highly complex technology.

Three of the six manufacturing teams, including FuelCell Energy, have recently been awarded contracts to develop fuel cell/hybrid technology for application to large central generation systems characterized by FutureGen. The remaining manufacturing teams are developing fuel cells for possible use in both these large systems as well as in distributed generation applications such as auxiliary power units, military power applications and remote or on-site power generation.

The DOE budget request for this program is \$63.3 million, a slight increase from fiscal year 2006 funding. This level of funding, if dedicated to the base SECA program would be about \$13 million more than amounts available to the base program in fiscal year 2006, but still below fiscal year 2005 funding levels. In fiscal year 2006 and 2007 the program is entering Phase II of development, which involves large scale development work on the part of manufacturing teams in the program and which will require more funding to continue to meet the DOE proposed schedule. As part of this greater commitment, manufacturing teams entering Phase II are required to provide a minimum of 50 percent of the funds needed for the program, which is an increase from the 25 percent cost-sharing required in Phase I. For these reasons additional funding is needed to continue progress apace for this exciting new technology.

We believe that the SECA fuel cell/hybrid program has achieved the progress to date as anticipated by the program managers, and will continue to display such progress given sufficient funding support by DOE and the Congress. Hybrid technology has been successfully integrated into the program and an emphasis on use with coal-based systems has been established. Industry partners in the program have continued and increased cost-sharing support. This technology is essential to meeting the efficiency and emissions goals of the President's FutureGen program and will also provide low-cost, low-emissions alternatives for distributed generation applications. Therefore, we urge you to support our request for \$75 million to execute the DOE Fossil Energy, Fuels and Power Systems, Fuel Cell Program in fiscal year 2007.

PREPARED STATEMENT OF THE ALASKA ENERGY AUTHORITY

The Alaska Energy Authority (AEA), the State of Alaska's lead agency for energy planning and development, thanks the subcommittee for this opportunity to present written testimony in support of U.S. Department of Energy (USDOE) appropriations. AEA works in partnership with USDOE, the Denali Commission, and other Federal agencies to provide reliable and affordable energy to the citizens of our State. To sustain this work, we request the subcommittee:

- Reinstate USDOE funding and support for the national Regional Biomass Energy Program and the Geothermal Program. These modestly funded programs help us develop valuable, locally-funded projects such as:
 - A sawmill waste-fired heating system that saves the City of Craig, Alaska \$100,000 per year, and
 - A 400 kW geothermal power plant at Chena Hot Springs, Alaska that saves \$270,000 per year in diesel fuel costs;
- Support USDOE funding for the State Energy Program and the Combined Heat and Power Program. These cost-share programs help us identify efficiency projects such as:
 - A waste heat recovery project that saves Kotzebue, Alaska \$150,000 per year, and
 - A lighting upgrade project that saves the Iditarod School District \$16,000 per year;
- Support the USDOE's Arctic Energy Office in Fairbanks. The Arctic Energy Office and its partner, the University of Alaska, play crucial roles in the research, development, and deployment of fossil energy technology in remote areas of Alaska. Recognizing that Alaska also holds substantial renewable energy re-

sources, we request that the subcommittee consider support for the Arctic Energy Office in the area of energy efficiency and renewable energy.

Again, thank you for the opportunity to present these written comments to the subcommittee. Your staff may contact me with questions or requests for further information.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS

As Chair of the Board of Directors for the National Association for State Community Services Programs (NASCS), I am pleased to submit testimony in support of the Department of Energy's (DOE) Weatherization Assistance Program (WAP) and in support of DOE State Energy Programs (SEP). We are seeking a fiscal year 2007 appropriations level of \$275 million for the WAP and \$74 million for SEP. NASCS believes these funding levels are essential in continuing and improving the outstanding results of these State grant programs for our citizens.

NASCS is the member organization representing the States on issues related to the WAP and the Community Services Block Grant. The State offices represented by our organization would like to thank this committee for its continued support of the WAP and SEP through the years. The \$242.6 million in WAP funds provided by the committee in 2006 is expected to result in:

- An additional 97,000 homes occupied by low-income families receiving energy efficiency services, thereby reducing the energy use and associated energy bills; and
- Greenhouse gases and environmental pollutants being significantly reduced due to the decrease in energy use by these newly weatherized homes; and
- Nearly 20,000 full time, highly skilled, jobs being supported within the service delivery network and in related manufacturing and supplier businesses;
- Weatherization reduces the need for importing foreign oil by as much as 18 million barrels per year and this number continues rise.

The WAP is the largest residential energy conservation program in the Nation and serves a vital function in helping low-income families reduce their energy use. Developed as a pilot project in 1975, the WAP was institutionalized in 1979 within DOE and is operated in all 50 States, the District of Columbia, and on several Native American reservations. The WAP funds are used to improve the energy efficiency of low-income dwellings using the most advanced technologies and testing protocols available in the housing industry. The energy use reduction resulting from these efforts helps our country reduce its dependency on foreign oil and decreases the cost of energy for families in need. With lower energy bills, these families can increase their usable income and buy other essentials like food, shelter, clothing, medicine, and health care.

The WAP provides an energy audit for each home to identify the most cost-effective measures, which typically include adding insulation, reducing air infiltration, servicing the heating and cooling systems, and providing health and safety diagnostic services. According to the Energy Information Administration's (EIA) Annual Energy Outlook, 2005 projected first-year energy savings for households weatherized during this year are estimated to be \$440, reflecting revised assumptions about future natural gas prices. For every \$1 spent, the WAP returns \$2.83 in energy and non-energy benefits over the life of the weatherized home, based on these same EIA long-term energy prices outlook and studies conducted by the Oak Ridge National Laboratory. These savings occur for several years into the future. Since the program's inception, more than 5.5 million homes have been weatherized using Federal, State, utility and other monies.

As we all know, these are troubling times facing our Nation—war, budget deficits, homeland security needs, and a slowed economic recovery. These times create added financial burdens for all Americans, but especially for those who live at or below the poverty line. Low-income families have always spent a disproportionate share of their income for energy needs than their middle-income counterparts. For example, a typical middle class family pays about 5 percent of their annual income for energy costs (heat, lights, air conditioning, appliances and hot water). Low-income families pay nearly the same dollar amount each year for energy but this amount represents a significantly higher percentage of their total household income (16 to 20 percent). In times of energy shortages and escalating energy costs, the energy burden for these families can reach 25 to 40 percent or more of their available income.

When energy costs rise, like they have during the 2005–2006 heating season, even a nominal increase can have a dramatic negative impact on low-income families.

The expected increase in this year's energy costs may amount to an additional \$600 or more for most families. For middle-income families, this increase will amount to less than one-half of 1 percent of the total household income. For many low-income families; however, this increase will result in a 4 to 5 percent reduction in their expendable income and will cause families to go without other important essentials like food, medicine, or clothing to meet this higher financial demand.

These families need long-term solutions to help them reduce their energy use both now and in the future—resulting in lower energy bills. That is the primary mission of the Weatherization Assistance Program—“To reduce heating and cooling costs for low-income families, particularly for the elderly, people with disabilities, and children, by improving the energy efficiency of their homes while ensuring their health and safety.”

The Oak Ridge National Laboratory reports entitled *State Level Evaluations of the Weatherization Program Conducted From 1990–2001* found that the WAP significantly improved its energy savings results during those years. In 1996, the program showed savings of 33.5 percent of gas used for space heating—up from 18.3 percent savings in 1989. The increase in savings was based in large part on the introduction and use of more sophisticated diagnostic tools and audits. Families receiving weatherization services can reduce their heating energy use by an average of 22 percent, making the cost for heating their homes more affordable. The Evaluation report also concluded that the WAP possessed a favorable cost-benefit ratio. Simply stated, the Federal funds provided to support the program have a 140 percent return on investment, or nearly \$2.83 in benefits for every \$1 invested. Meta-evaluations in 1999 and 2001 confirmed the high level of energy saving potential for the WAP.

The WAP has always served as a testing ground and provides a fertile field for the deployment of research conducted by national laboratories. For example, the Oak Ridge National Laboratory developed the National Energy Audit (NEAT) for use by local agencies in assessing cost effectiveness of service delivery. Oak Ridge is currently investigating the cost effectiveness of including certain base load measures (water heater replacement, lighting, small motor efficiency, refrigerator replacements) into the program and continues to test other protocols and material installation techniques to help State and local agencies improve their field operations. The Florida Solar Energy Center and the State of Hawaii are working on the development of cost effective solar hot water heaters. Many of our States have implemented refrigerator replacement programs to decrease energy base-load for low-income families.

One of the major outcomes of WAP field deployment is that the private sector eventually adopts these new technologies. This pattern has been established through several advancements including blower door-directed air infiltration, duct system testing and sealing, furnace efficiency standards, and insulation and ventilation protocols. The acceptance of these standards and protocols by the private sector is enormously important as builders attempt to construct new properties or rehabilitate existing ones using a renewed energy efficiency philosophy.

Of equal importance to the technological and programmatic foundation are the WAP contributions in achieving overall national energy policies and social strategies. Some examples of how the program helps achieve these goals include:

- Reducing harmful green house gas through reduced CO₂ emissions by avoiding energy production. Each time a house is weatherized, the reduction in energy needs reduces the environmental impact associated with creating that energy reduction of sulfur dioxide, carbon, and other pollutants spilled into the atmosphere from the burning of fossil fuels like oil, coal, kerosene, wood, gas, and propane.
- Increasing jobs in communities throughout the country. For every \$1 million invested in the WAP, more than 40 full-time jobs are created and supported in the States. Another 20 jobs are created in companies who provide goods and services to the program.
- Investing money into communities through job creation, local purchasing of goods and services, and tax revenues. These investments result in many secondary benefits. These residual benefits, known as “economic benefit multipliers,” are applied to local community investment to value the real worth of money used locally. This multiplier is 3.5 to 4 times the actual investment. This means that an investment of \$275 million in the WAP could yield nearly \$1.1 billion in economic benefits to local communities.
- Reducing consumption of imported fuels by reducing residential energy consumption. Our country currently imports nearly 60 percent of its oil from foreign countries. This figure is higher than the import percentage in the 1970's, when the oil embargo threatened our ability to operate as a Nation. The con-

servation efforts of the WAP network will help reduce our country's dependency on foreign oil, thereby strengthening our country's national security.

In 2001, the administration earmarked the WAP as a "Presidential Priority" in its National Energy Policy Plan. President Bush committed \$1.4 billion to be added to WAP over a 10-year period to help thousands of low-income families meet their energy needs while reducing their energy burden. Each year since then, the administration has asked for higher appropriations levels in their budgets submitted to Congress. In response to these higher budget requests, Congress voted to fund the WAP in 2006 at \$242.5 million—\$15 million more than the President's request. In a complete reversal of the President's long-standing commitment to the program, the administration has significantly reduced its 2007 request to \$164.2 million, or a 33 percent reduction. We are writing to urge your subcommittee to restore funding for the Low Income Weatherization Assistance Program to levels no less than \$275 million for WAP and \$74 million for State Energy Programs (SEP) for fiscal year 2007.

Weatherization is a clearly proven investment which has helped over 5.5 million families live in safer, more comfortable living conditions. If the President's budget is upheld, 33,000 low-income families will be denied critical weatherization services this year. With this funding, these families would have saved an average of \$440 or more a year on energy. This money could have been used for essential needs such as food, clothing, and medicine. Instead, these low-income households will have to spend more than \$200 million from their meager incomes to pay for energy that could have been saved if the homes were weatherized in 2007. At a time when oil and natural gas prices remain high and low-income families are facing huge increases in their energy costs, it is irresponsible for the administration to place added burdens on these families by choosing not to help them conserve energy.

NASCSP is also concerned about the low level of funding provided for the State Energy Programs (SEP) in 2006. SEP enjoys a broad constituency, supporting State energy efficiency programs that include energy generation, fuels diversity, energy use in economic development, and promoting more efficient uses of traditional energy resources. SEP funding has fallen steadily from a recent high in 1995 of \$53 million to its fiscal year 2006 level of \$36 million. The State energy offices are the crucial centers for organizing energy emergency preparedness. They have been asked to do much new work in the sensitive area of infrastructure security. Taking into consideration this growing burden, the increasing difficulty of managing energy resources, together with increasing opportunities for States to implement cost-saving measures, we are supporting their request of \$74 million for fiscal year 2007. This level would restore the program's recent funding cuts, enhance their ability to address energy emergency preparedness, and allow for inflationary impacts since 1995.

By the evidence provided herein, this committee can be assured that the funding invested in WAP and SEP will provide essential services to thousands of low-income families, resulting in greater energy savings, more economic investments, increased leveraging of other funds, and less reliance on high-cost, foreign oil—outcomes that will benefit the Nation. NASCSP looks forward to working with committee members in the future as we attempt to create energy self-sufficiency for millions of American families through these invaluable national programs.

PREPARED STATEMENT OF THE UF-DOE HIGH TEMPERATURE ELECTROCHEMISTRY
CENTER, UNIVERSITY OF FLORIDA

Chairman and members of the subcommittee, our quality of life, standard of living, and national security depend on energy. The limited supply of fossil energy, its accelerated consumption, and the dependence on its supply from unstable Middle East countries are major U.S. economic and security issues. To address these issues we must have a strong balanced energy research program, which is based on the best use of our indigenous natural resources while minimizing our dependence on imported energy forms. Therefore, our testimony is directed to programs in the Office of Fossil Energy of the U.S. Department of Energy. Specifically we request that the High Temperature Electrochemistry Center (HiTEC) be funded at the fiscal year 2006 level of \$8 million (including \$750,000 at the University of Florida), and that the Solid State Energy Conversion Alliance (SECA) be funded at \$67 million for a total SECA-HiTEC appropriation within the Office of Fossil Energy, Research and Development, Fuels and Power Systems of \$75 million.

HiTEC.—The High Temperature Electrochemistry Center (HiTEC) is part of the Research and Development Program and provides the research necessary to develop enabling technologies for advanced power generation systems, including the Presi-

dent's FutureGen, Clean Coal, and Hydrogen programs. HiTEC not only supports DOE's mission, but through the HiTEC Satellite Centers at Montana State University, the University of Florida, and other U.S. universities, creates concentrated centers of excellence where the fundamental research necessary to meet U.S. energy needs are addressed.

As an example, at the University of Florida we are developing the fundamental understanding of ionic transport in, and electrocatalytic (electrochemical catalysis) phenomena on the surface of, ion conducting materials. From first-principles calculations and molecular dynamic simulations of ionic transport and gas-solid interactions to synthesis and characterization (structural, electrochemical, and catalytic) of novel ion conducting materials and electrocatalysts. The results of these investigations will minimize the polarization losses of fuel cells and batteries, maximize the hydrogen production from gas separation membranes, and enhance the signal and selectivity of exhaust sensors. In so doing this research will improve U.S. energy efficiency and security.

A further benefit of this university-based research program is that it provides for the education of the next generation of energy scientists and engineers necessary to meet the employment needs of this growth industry. As such, this university-based energy research program is directly aligned with the goals of the President's "American Competitiveness Initiative," the pending Senate legislation "Protecting America's Competitive Edge Acts," and the National Academy's "Gathering Storm" report.

Therefore, we recommend continuation of this program at the fiscal year 2006 level of \$8 million including \$750,000 at the HiTEC center at the University of Florida.

SECA.—Solid State Energy Conversion Alliance (SECA) is the DOE Fossil fuel cell program. Fuel cells are a critical technology for efficient utilization of our natural resources. What distinguishes the SECA program from the Office of Energy Efficiency's fuel cell program is the fuel flexibility of the type of fuel cell being developed by SECA. Not only can these fuel cells contribute to a future Hydrogen Economy, but unlike other fuel cells, they can operate using conventional fuels (from natural gas to coal derived gasses, to gasoline and diesel fuels) as well as renewable biomass based fuels. Thus, development and deployment of the SECA fuel cells can improve U.S. energy efficiency and security utilizing our current energy infrastructure.

The SECA program is a successful DOE-industry-university partnership involving 6 industry teams, 20 universities and 4 national labs. This program is achieving its milestones and goals and as such will see market entry in the next few years providing near term U.S. energy efficiency gains. However, in order to deploy pre-commercial prototypes a funding increase for the SECA program in fiscal year 2007 to \$67 million is necessary.

Thank you for the opportunity to offer testimony on these important programs. We appreciate the support of the subcommittee.

PREPARED STATEMENT OF THE COALITION OF NORTHEASTERN GOVERNORS

WEATHERIZATION ASSISTANCE PROGRAM, NORTHEAST HOME HEATING OIL RESERVE, AND REGIONAL BIOMASS ENERGY PROGRAM

The Coalition of Northeastern Governors (CONEG) is pleased to provide this testimony to the Senate Subcommittee on Energy and Water, and Related Agencies regarding fiscal year 2007 appropriations for Energy Conservation and Renewable Energy programs of the U.S. Department of Energy. The Governors recognize the difficult funding decisions which confront the subcommittee this year and appreciate the subcommittee's support for these programs.

At a time of record high energy prices and heightened attention to the security, reliability and efficiency of the Nation's energy systems, these conservation and renewable energy programs have taken on an increased significance. Modest Federal investment in these programs provides substantial energy, economic and environmental returns to the Nation—leveraging additional State and private sector investment and contributing to sound energy management. To continue the contribution of these programs to cost-effective energy strategies, the CONEG Governors request that funding for the State Energy Program be increased to \$49.5 million, and that funding for the Weatherization Assistance Program be provided at a level of at least \$250 million in fiscal year 2007. The Governors support the President's request that funding for the Northeast Home Heating Oil Reserve be provided at a level of \$4.95 million in fiscal year 2007. The Governors also request that the subcommittee pro-

vide \$7.5 million to continue the National Biomass Partnership (previously known as the Regional Biomass Energy Program).

Administered by the 50 States, District of Columbia and territories, the Department of Energy's State Energy Program and Weatherization Assistance Program are a cost-effective way to achieve national energy goals. The National Biomass Partnership helps sustain public and private sector investment in biomass technologies and contributes to expanded biomass energy development. These programs provide valuable opportunities for the States, industry, national laboratories and the U.S. Department of Energy to collaborate in moving energy efficiency and renewable energy research, technologies, practices and information to the public and into the marketplace.

State Energy Program.—The State Energy Program (SEP) is the major State-Federal partnership program addressing energy efficiency and conservation in all sectors of the economy. Cost-shared by the States, the program allows State energy offices to increase the effectiveness of the Federal funds by tailoring the energy activities to address particular local energy priorities and opportunities.

Increased SEP funding in fiscal year 2007 will ensure that States can continue their work toward the national energy goal of a balanced, reliable and secure energy system. SEP provides the vital funds that allow State energy offices to move energy efficiency and renewable energy technology into the marketplace, assist both the private and public sectors in reducing energy use and costs, and conduct extensive public information activities. Increased SEP funding will also ensure that States can rely on their State energy offices to continue vital emergency preparedness activities.

The modest Federal funds provided to the SEP are an efficient Federal investment, as they are leveraged by non-Federal public and private sources. According to a recent study of the SEP done by the Oak Ridge National Laboratory at the request of U.S. Department of Energy, every dollar in SEP funding results in \$7.22 in annual energy cost savings and also yields \$10.71 in "leveraged" funding from the State and private sectors. SEP projects have resulted in more than \$333 million in annual energy costs savings.

Weatherization Assistance Program.—Through a network of partnerships with more than 970 local weatherization agencies across the country, the Weatherization Assistance Program (WAP) improves the energy efficiency of more than 100,000 low-income dwellings a year, thereby reducing the heating and cooling bills of the Nation's most vulnerable citizens. According to the U.S. Department of Energy, low-income households spend more than 15 percent of their annual income on energy, compared to 3.5 percent for other households. The Weatherization Assistance Program strives to reduce this "energy burden" of low-income residents through such on-going energy saving measures as the installation of insulation and energy-efficient lighting, and heating and cooling system tune-ups. These measures can result in energy savings as high as 30 percent. According to the National Association for State Community Service Programs, based on current energy prices, the average family saves approximately \$400 per year after weatherization services are provided.

The WAP also provides numerous non-energy benefits. Oak Ridge National Laboratory has concluded that for every \$1 of DOE investment, there are non-energy benefits worth \$1.88. For instance, the WAP generates more than 8,000 jobs nationwide, creating 52 new jobs for every \$1 million invested. In addition, the decreased energy use resulting from weatherization measures also provides environmental benefits through decreased carbon dioxide emissions.

National Biomass Partnership.—Renewable energy plays an increasingly vital role in meeting the Nation's goal of reduced reliance on imported fossil fuels. Some of the most promising renewable technologies use biomass to achieve that goal. The National Biomass Partnership (formerly known as the Regional Biomass Energy Program) is a primary link among State, private, and Federal biomass activities. It is a vital complement to the research and technology work of the Department of Energy and its national laboratories, and can assist Federal agencies in carrying out the biomass provisions in EPAct 2005 and the President's Advance Energy Initiative. The activities are tailored to the specific resources and opportunities in each region of the country, thus providing a critical link in the chain of research, resource production and technology commercialization. The Partnership has been successful in promoting the adoption of State policies that encourage development of biomass resources, increasing public awareness of the benefits and uses of bioenergy; leveraging Federal funding and State resources, and increasing the intensity of biomass use. In the Northeast, the Partnership has been instrumental in stimulating an estimated \$24 million in public and private investment in bioenergy development; offering technical assistance that contributed to new bioenergy and biopower

development policies in six States; and providing educational assistance to increase public and private sector awareness of the potential of regional biomass development. As a result, the Northeast has seen an increase in development plans for new ethanol and biodiesel production facilities and biomass power capacity, as well as a growth in demand for ethanol.

The Partnership is a recognized source of objective and reliable information on biomass. It is also a valued resource for States in their efforts to expand the use of biodiesel in transportation and heating oil and in promoting appropriate use of biomass for expanded electric power and combined heat and power applications. These biomass applications are important to the Northeast's near term goals of increased renewable energy use and voluntary programs to reduce greenhouse gases.

Northeast Home Heating Oil Reserve.—The Nation's heightened emphasis on energy security places renewed importance on the Northeast Home Heating Oil Reserve. The Northeast, with its reliance upon imported fuels for both residential and commercial heating, is particularly vulnerable to the effects of supply disruptions and price volatility. The Reserve provides an important buffer to ensure that the States will have prompt access to immediate supplies in the event of a supply emergency.

In conclusion, we request that the subcommittee provide funding in fiscal year 2007 for the State Energy Program at the President's requested level of \$49.5 million; provide \$250 million for the Weatherization Assistance Program; provide \$7.5 million for the National Biomass Partnership; and provide funding at the President's requested level of \$4.95 million for the Northeast Home Heating Oil Reserve. These programs have demonstrated their effectiveness in contributing to the Nation's goals of environmentally sound energy management and improved economic productivity and energy security.

We thank the subcommittee for this opportunity to share the views of the Coalition of Northeastern Governors, and we stand ready to provide you with any additional information on the importance of these programs to the Northeast.

PREPARED STATEMENT OF THE BIOMASS ENERGY RESEARCH ASSOCIATION

SUMMARY

This testimony pertains to the fiscal year 2007 appropriations for biomass energy research, development, and demonstration (RD&D) conducted by the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE). This mission-oriented biomass RD&D is funded by the Energy and Water Development bill, and is performed under the heading of Energy Supply and Conservation, Energy Efficiency and Renewable Energy. BERA recommends a total appropriation of \$150,000,000 in fiscal year 2007 under Biomass and Biorefinery Systems R&D (Energy Supply and Energy Conservation), exclusive of earmarks. Specific lines items for the DOE biomass RD&D budget are as follows:

- \$60,000,000 for Biochemical Conversion Platform Technology (conversion of corn starch, corn stover and fiber, wood, forest residues and perennial crops);
- \$50,000,000 for Thermochemical Conversion Platform Technology (conversion of wood and forest resources to pyrolysis oils and syngas);
- \$25,000,000 for Integrated Biorefinery Technologies; and,
- \$15,000,000 for Utilization of Platform Outputs: Core Technologies for Chemicals.

BACKGROUND

On behalf of BERA's members, we would like to thank you, Mr. Chairman, for the opportunity to present the recommendations of BERA's Board of Directors for the high-priority programs that we strongly urge be continued or started. BERA is a non-profit association based in the Washington, DC area. It was founded in 1982 by researchers and private organizations conducting biomass research. Our objectives are to promote education and research on the economic production of energy and fuels from freshly harvested and waste biomass, and to serve as a source of information on biomass RD&D policies and programs. BERA does not solicit or accept Federal funding for R&D.

There is a growing realization in our country that we need to diversify our energy resources, develop technologies to utilize indigenous fuels, and reduce reliance on foreign oil. Economic growth is fueling increasing energy demand and placing considerable pressure on our already burdened energy supplies and environment. The import of oil and other fuels into the United States is growing steadily and shows no sign of abating. Industry and consumers both are being faced with rapidly rising

costs for fossil fuels, which are vital to our economy. A diversified energy supply will be critical to meeting the energy challenges of the future and maintaining a healthy economy with a competitive edge in global markets.

Biomass is the single renewable resource with the ability to replace liquid transportation fuels. It can also be used as a feedstock to supplement the production of chemicals, plastics, and other materials that are now produced from crude oil. In addition, gasification of biomass or biomass-derived pyrolysis oils produces a syngas that can be utilized to supplement the natural gas supply and electricity from fossil fuels. Viable fuel and chemical products are already being produced from biomass, but on a very small scale compared to the potential fuel markets. Research should be expanded to realize the full potential of biomass as a component of our energy supply.

The Energy Policy Act of 2005 has created various incentives for diversifying our energy supply. The Act provides a good foundation, but to be effective it must be supported by research that will enable the United States to take advantage of our abundant, domestic, renewable resources in a cost-effective way. The recently announced Biofuels Initiative provides for additional funding to support the use of cellulosic biomass as a feedstock for ethanol, with the potential to replace as much as 30 percent of domestic gasoline demand in 2030. We support this Initiative and believe it will help to accelerate the development and utilization of this important resource.

BERA RECOMMENDATIONS FOR DOE BIOMASS RD&D

BERA's recommendations support a balanced program of mission-oriented RD&D, including projects to develop and demonstrate advanced biochemical and thermochemical biomass conversion processes, alternative liquid transportation fuels, and co-production of fuels, chemicals, and power in integrated biorefineries. BERA's recommendations for funding for DOE biomass RD&D are shown in Table 1 and outlined below. Note that recommended budgets for demonstration projects do not include the required 50 percent industry cost-share.

Fund both biochemical and thermochemical conversion platforms as foundations for integrated biorefineries.—The biochemical and thermochemical platforms are both important and BERA urges that both be funded to accelerate the development and demonstration of large-scale, synergistic integrated biorefinery systems. These large-scale systems have the most potential to enable biomass to have a major role in displacing fossil fuels. BERA urges that biochemical conversion research be funded at the DOE request, and that thermochemical conversion R&D for biomass gasification, pyrolysis, and synthesis of alternate liquid fuels be expanded and given a higher priority.

Support development/demonstration of integrated biorefineries.—Activities should address integration of promising biological and thermochemical process steps and processes to improve overall process efficiency and reduce product cost, taking into consideration siting, plant design, financing, permitting, environmental controls, waste processing and disposal, and sustained operations; feedstock acquisition, transport, storage, and delivery; and storage and delivery of products to market. BERA recommends that industrial partners and States should be carefully selected to demonstration mission-oriented benefits for participation in this cost-shared program.

Reduce level of earmarks.—The level of earmarks in the last few years has resulted in limiting new initiatives and premature reductions of scheduled programs by EERE. BERA respectfully asks the subcommittee to carefully consider the impacts of all earmarks on EERE's biomass energy RD&D. If earmarks are slated for projects that do not contribute to DOE's research goals, BERA urges that they be add-ons to the baseline funds rather than deductions.

TABLE 1.—BIOMASS/BIOREFINERY SYSTEMS R&D (ENERGY SUPPLY)

Program Area	Description of RD&D	Research	Scale-Up & Demonstration	All RD&D
Biochemical Conversion Platform R&D.	Conversion of corn starch, stover and fiber, wood and forest residues, and perennial crops.	\$30,000,000	\$30,000,000	\$60,000,000
Thermochemical Conversion Platform R&D.	Conversion of wood and forest residues to pyrolysis oils or syngas.	20,000,000	20,000,000	40,000,000

TABLE 1.—BIOMASS/BIOREFINERY SYSTEMS R&D (ENERGY SUPPLY)—Continued

Program Area	Description of RD&D	Research	Scale-Up & Demonstration	All RD&D
Integration of Biorefinery Technologies.	Validation of benefits of integrating biochemical and thermochemical conversion technologies in integrated biorefineries.	.....	15,000,000	15,000,000
Utilization of Platform Outputs: Core Technologies for Fuels, Chemicals, and Electricity.	Development and co-production of fuels, chemicals and electricity from biochemical and thermochemical platform output streams.	15,000,000	.....	15,000,000
State and Regional Biomass Partnerships.	Outreach and support for regional bioenergy projects.	.....	5,000,000	5,000,000
TOTAL .....	.....	72,000,000	78,000,000	150,000,000

Build U.S. leadership in biomass science and technology through mission-oriented bioenergy research.—BERA recommends that at least 50 percent of the Federal funds appropriated for biomass research, excluding the funds for scale-up projects, are used to sustain a national biomass science and technology base via sub-contracts for industry and universities. While the national laboratories should facilitate coordinating this research, increased support for U.S. scientists and engineers in industry, academe, and research institutes will encourage commercialization of emerging technologies and serious consideration of new ideas. It will also help to build the skilled workforce, scientific community, and state-of-the-art research platforms needed to support a future domestic bioenergy industry.

Utilization of platform outputs R&D, core technologies for fuels, chemicals and electricity.—In the past EERE has focused on competitive selection of R&D projects based on an analytical effort that identified the top 12 building block chemicals that can be produced from sugar intermediates via biological or chemical conversions. BERA urges that this effort focus instead on efficient and economical production of liquid fuels and commodity organic chemicals, which have established markets, rather than high-value chemicals, which are either new products without established markets or specialty chemicals with niche markets. Biomass-derived fuels and chemicals, with the ability to co-produce electricity, will have a greater probability of reducing fossil fuels consumption. BERA urges that this effort include continuing research on sugar intermediates and be expanded to include direct conversion of other intermediates and biomass to fuels and commodity organic chemicals.

State and Regional Partnerships (Formerly Regional Biomass Energy Program).—The State & Regional Partnerships (SRP) was created to succeed the Regional Biomass Energy Program (RBEP) which functioned as a biomass outreach program for 20 years. The SRP serves an important function at the State level in promoting the use of biomass fuels. BERA strongly urges that the SRP be continued in fiscal year 2007.

BIOMASS AND BIOPRODUCTS INITIATIVE

The goal of the Biomass and Bioproducts Initiative (BBI), created through “The Biomass Research and Development Act of 2000” and Title IX of the Farm Bill, was to triple the use of bioenergy and biobased products. Congress has provided annual funding for the BBI since fiscal year 2000. BERA strongly urges that the BBI be continued in fiscal year 2007 at the funding levels recommended by BERA for the cost-shared demonstration projects shown in Table 1.

BERA congratulates DOE and USDA for the cooperation and joint coordination of the programs of each department to increase the use of biomass for production of affordable fuels, electricity, and products. To meet accelerated goals for biofuels, the BBI must be fully incorporated into DOE’s and USDA’s biomass research programs. Large, strategically located, energy plantations are ultimately envisaged in which waste biomass and harvested biomass production systems are integrated with biorefineries and operated as analogs of petroleum refineries to afford flexible slates of multiple products from multiple feedstocks and to co-produce electricity.

BERA also recommends that implementation of the BBI should include identification of each Federal agency that provides funding related to biomass energy development and their programs and expenditures, as is done by DOE and USDA. This on-going activity should be expanded to include other Federal agencies and organi-

zations (e.g., Environmental Protection Agency, Department of Transportation, Department of Commerce, National Science Foundation) to help fine-tune the critical pathways to program goals, to coordinate R&D efforts, and to maximize the return on RD&D investment.

PREPARED STATEMENT OF FLORIDA STATE UNIVERSITY

Summary of Request.—Electric Power Infrastructure—Security Research & Development; *Agency.*—Energy and Water (Dept. of Energy); *Program.*—Electricity Transmission and Distribution; *Fiscal Year 2007 Request.*—\$3,500,000. We respectfully request the committee consider directing DOE to continue the funding committed to scientists already working on DOE-funded projects in the Ocean Carbon Sequestration Program administered by the Office of Biological and Environmental Research.

Mr. Chairman, I would like to thank you and the members of the subcommittee for this opportunity to present testimony before this committee. I would like to begin by strongly endorsing the President's fiscal year 2007 budget proposal that focused on substantial increases in research funding for the Department of Energy's Office of Science. The research funding provided by that Office for the physical sciences and engineering is critical to our Nation's future. The approximately 14 percent increase proposed by the President as part of his American Competitiveness Initiative is sorely needed by the research community as an investment in our future security. It is our hope that this subcommittee could support this effort in your fiscal year 2007 budget plan.

Next, I would like to take a moment to briefly acquaint you with Florida State University. Located in Tallahassee, Florida's capitol, FSU is a comprehensive Research I university with a rapidly growing research base. The University serves as a center for advanced graduate and professional studies, exemplary research, and top-quality undergraduate programs. Faculty members at FSU maintain a strong commitment to quality in teaching, to performance of research and creative activities, and have a strong commitment to public service. Among the current or former faculty are numerous recipients of national and international honors including Nobel laureates, Pulitzer Prize winners, and several members of the National Academy of Sciences. Our scientists and engineers do excellent research, have strong interdisciplinary interests, and often work closely with industrial partners in the commercialization of the results of their research. Florida State University had over \$182 million this past year in research awards.

Florida State University attracts students from every State in the Nation and more than 100 foreign countries. The University is committed to high admission standards that ensure quality in its student body, which currently includes National Merit and National Achievement Scholars, as well as students with superior creative talent. We consistently rank in the top 25 among U.S. colleges and universities in attracting National Merit Scholars to our campus.

At Florida State University, we are very proud of our successes as well as our emerging reputation as one of the Nation's top public research universities.

Mr. Chairman, let me tell you about our primary interests today.

Recent large-scale failures in the electrical grid systems of North America and Europe have made us aware of the critical nature of our dependence on the availability of electrical power. A contributing factor to these failures was a lack of detailed understanding of the system dynamics in response to an initial minor disturbance. Lack of investment in power systems grids over the last 20–30 years has eroded the redundancy traditionally built into the system by allowing load increases without an equivalent growth in the supporting transmission network, control sophistication or distributed generation capability. Over the same time, the lack of investment in R&D resulted the closure of many power engineering educational programs. Authoritative estimates suggest that in 2002 only 500 bachelor's degrees in power engineering were awarded in the United States.

The proposed research activities within this System-wide project will build on existing expertise at FSU, other universities within Florida, and several of Department of Energy's National Laboratories. The research will focus specifically on critical issues associated with bringing modernization to the U.S. electric grid. Many of the projects will have industrial partners, thereby ensuring rapid technology transfer from research-to-practice. These activities include:

- Employing the real time digital simulator capability—present and future—at FSU/CAPS to be able to simulate the real-time behavior of a portion of a regional grid and its interconnections to better understand the areas of vulnerability for major outages and cascading failures. It is envisioned that this will

become a national user facility with remote access capability over high-speed connections.

- Use of the real-time digital simulator through comparisons of concurrent real time modeling and an actual system to assess new technologies, including energy storage, intelligent agent based controls, operating procedures, improved analytical and simulation techniques, and security assessment of SCADA systems.
- Advanced materials R&D for superconductivity applications in power systems. Some of the areas of research include the characterization of the engineering behavior of superconducting conductors, and development of advanced insulation materials specifically geared for low-temperature environments.

In a second area of interest, you are probably aware that industrial by-products have increased the concentration of carbon dioxide in the atmosphere from 290 to 380 parts per meter over time. This increase has been implicated in the rise of global temperature because carbon dioxide interferes with the re-radiation of solar energy back into space. One way to reduce the rate of increase of carbon dioxide in the atmosphere is to collect it from industrial sources and store it, for example, in the deep ocean (Intergovernmental Panel on Climate Change, 2006). The wisdom of this option is unclear because little is known about the environmental consequences. The United States Department of Energy (DOE) has been funding research to fill this knowledge gap. In one case, DOE funded an initial 3-year grant and a 3-year renewal for a cooperative effort between Louisiana State University and Florida State University. This team is assessing the sensitivity of deep-sea animals to carbon dioxide-rich seawater; is studying the seafloor area that would be exposed to carbon dioxide-rich seawater during full-scale ocean storage and to assess the risk extinction; and is investigating its effects of carbon dioxide-rich seawater on similar species that live in shallow water, which are easier and cheaper to study.

The DOE fiscal year 2007 Congressional Budget Request eliminates funding for the Ocean Carbon Sequestration Program administered by the Office of Biological and Environmental Research, which supports the research. Many of the benefits from DOE's investment in this important area of research will be lost if funding is terminated. We respectfully request the committee consider directing DOE to continue the funding committed to scientists already working on DOE-funded projects in this area.

Mr. Chairman, we believe this research is vitally important to our country and would appreciate your support.

PREPARED STATEMENT OF THE UNIVERSITY CORPORATION FOR ATMOSPHERIC
RESEARCH

On behalf of the University Corporation for Atmospheric Research (UCAR) and the university community involved in weather and climate research and related education, training and support activities, I submit this written testimony for the record of the Senate Committee on Appropriations, Subcommittee on Energy and Water Development.

UCAR is a 69-university member consortium that manages and operates the National Center for Atmospheric Research (NCAR) and additional programs that support and extend the country's scientific research and education capabilities. In addition to its member research universities, UCAR has formal relationships with approximately 100 additional undergraduate and graduate schools including several historically black and minority-serving institutions, and 40 international universities and laboratories. UCAR's principal support is from the National Science Foundation with additional support from other Federal agencies including the Department of Energy (DOE).

DOE OFFICE OF SCIENCE

The atmospheric and related sciences community appreciates Congress' support for the DOE Office of Science, and enthusiastically supports the inclusion of the DOE Office of Science in the American Competitiveness Initiative within the President's budget request for fiscal year 2007. The needs of the country demand that DOE continue to produce a world-class program in science and energy security research. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science, and supports unique and vital parts of U.S. research in climate change, geophysics, genomics, life sciences, and science education. The prospect of halting the recent slide in research funding within DOE and actually doubling the agency's research

budget holds great promise for DOE's investment in and contribution to our Nation's future.

I urge the subcommittee to fund the DOE Office of Science at the level of the President's fiscal year 2007 budget request, or \$4.1 billion, and to enable the agency to apply that entire amount toward planned agency research priorities. This level of research funding will augment and reinvigorate critical work of researchers throughout the Nation.

Biological and Environmental Research (BER)

Within the Office of Science, the Biological and Environmental Research (BER) program develops the knowledge necessary to identify, understand, and anticipate the potential health and environmental consequences of energy production and use. These are issues that are absolutely critical to our country's well-being and security. The President's BER request for fiscal year 2007 is \$510.3 million, an approximate increase of \$60.5 million over fiscal year 2006 funding when fiscal year 2006 congressionally directed programs are removed. While this is a healthy increase, it should be seen in the context of past appropriations and the decline of BER funding that has taken place over the past several years. The fiscal year 2005 final appropriation for BER was \$502.0 million with add-ons subtracted. The fiscal year 2007 request therefore makes up much ground lost recently, but does not get BER back to level funding when inflation is factored in.

Peer-reviewed research programs at universities, national laboratories, and private institutions play a critical role in the BER program by involving the best researchers the Nation has to offer, and by developing the next generation of researchers. Approximately 27 percent of BER basic research funding supports university-based activities directly and 40 percent supports basic research at national laboratories. All BER research projects, other than those in the "extra projects" category, undergo regular peer review and evaluation. I urge the subcommittee to fund Biological and Environmental Research at the level of the fiscal year 2007 budget request, or \$510.3 million, and to enable BER to apply that entire amount toward planned agency research priorities that are peer-reviewed and that involve the best researchers to be found within the Nation's university research community as well as the DOE labs.

Climate Change Research.—Within BER, the Climate Change Research contributes substantially to the Nation's Climate Change Research Initiative (CCRI) goals of understanding and predicting climate change, including its causes and consequences. The long-term DOE goal is to deliver improved climate data and models for policy makers and to substantially reduce differences between observed temperature and model simulations at regional scales. This work is critical to the ability of policy makers and stakeholders to provide stewardship resulting in a healthy planet—and it is particularly important as signs of increasingly dramatic change in our climate and environment appear. The Climate Change Research Request of \$134.9 million is a 4.6 percent decrease from the fiscal year 2006 appropriated level at a time when the request for BER is up 13.4 percent after congressionally directed projects are removed. I urge the subcommittee to fund Climate Change Research at an fiscal year 2007 level that is consistent with the request for BER stated above, and to enable DOE to apply the entire amount toward planned national research priorities.

Advanced Scientific Computing Research (ASCR)

Within DOE's Office of Science, the Advanced Scientific Computing Research program delivers leading edge computational and networking capabilities to scientists nationwide enabling advances in computer science and the development of specialized software tools that are necessary to research the major scientific questions being addressed by the Office of Science. Development of this capacity is a key component of DOE's strategy to succeed in its science, energy, environmental quality, and national security missions.

ASCR's continued progress is of particular importance to atmospheric scientists involved with complex climate model development, research that takes enormous amounts of computing power. By their very nature, problems dealing with the interaction of the earth's systems and global climate change cannot be solved by traditional laboratory approaches. The Intergovernmental Panel on Climate Change (IPCC) is compiling its Fourth Assessment Report to be completed in 2007, and ASCR's contribution to this international document is critical. Therefore, it is encouraging to see the increase for ASCR in the President's request for fiscal year 2007. I urge the committee to support the President's fiscal year 2007 request of \$318.6 million for DOE Advanced Scientific Computing Research, and to enable DOE to apply the entire amount toward planned national priorities.

Within ASCR, two programs are of particular importance to climate change computer modeling work: the National Energy Research Scientific Computing Center (NERSC) operated by Lawrence Berkeley National Laboratory, and the Energy Sciences Network (ESnet). NERSC is the high performance production computing facility for the Office of Science, serving thousands of scientists throughout the country at laboratories, universities, and other Federal agencies. Computing time is awarded to research groups based on peer review of submitted proposals. NERSC represents an important element of the administration's American Competitiveness Initiative strategy as outlined in the President's State of the Union address referencing the doubling of "the federal commitment to the most basic research programs in the physical sciences over the next ten years. This funding will support the work of America's most creative minds as they explore promising areas such as nanotechnology, supercomputing, and alternative energy sources."

ESnet enables researchers at laboratories, universities and other institutions to communicate with each other using collaborative capabilities that are unparalleled. This high-speed network enables geographically distributed research teams to collaborate effectively on some of the world's most complex problems. Researchers from industry, academia and national labs, through this program, share access to unique DOE research facilities, support the frequent interactions needed to address complex problems, and speed up discovery and innovation. The fiscal year 2007 budget request will enable DOE to deliver a network with two to four times the capability of today's ESnet.

NERSC and ESnet play complementary roles in advancing the complex and challenging science of climate change and other scientific areas of extreme importance to the security and quality of life of our citizens. I urge the committee to support the President's fiscal year 2007 requests of \$54.79 million for the National Energy Research Scientific Computing Center (NERSC), and \$22.7 million for the Energy Sciences Network (ESnet).

DOE plays a vital role in sustaining U.S. scientific leadership and generating U.S. competitiveness in a time when other countries are investing heavily in scientific research and technology. On behalf of UCAR and the atmospheric sciences research community, I want to thank the subcommittee in advance for your attention to the recommendations of our community concerning the fiscal year 2007 budget of the Department of Energy. We understand and appreciate that the Nation is undergoing significant budget pressures at this time, and support absolutely the effort to enhance U.S. security and quality of life through the American Competitiveness Initiative, of which the DOE Office of Science is a critical component.

PREPARED STATEMENT OF THE ASSOCIATION OF U.S. PETROLEUM ENGINEERING
DEPARTMENT HEADS

We are a committee of Department Heads for Petroleum Engineering departments in the United States. We are writing to inform the committee of the drastic harm that will be done to Petroleum Engineering education in the United States unless the appropriation for oil and natural gas technologies programs in the fiscal year 2007 Department of Energy budget is restored to at least its fiscal year 2006 appropriated level of \$64 million. This program provides the largest single source of funding for the research and graduate education in Departments of Petroleum Engineering and related disciplines throughout the United States. It directly benefits the Nation in improved recovery from domestic oil and natural gas fields, with a particular focus on providing research support for independents, who are without their own large research organizations. Beyond that, it directly benefits the education of both graduate and undergraduate students in Petroleum Engineering, and thereby helps provide the technical expertise that will be crucial as oil and natural gas supplies become more and more scarce and precious.

In all estimates made by the Energy Information Administration, oil and gas will serve as the major sources of energy to fuel our economy for the foreseeable future. Enhancing the domestic production requires innovative and advanced technologies to raise the recovery factor from the U.S. mature fields to well above 60 percent and to tap unconventional oil and gas resources. This is the only way we can buy the 50-75 years that it may take to realize economical access to the alternatives to oil and gas. Major oil companies, with their main focus on their international operations, are gradually pulling out of the U.S. oilfields and are not investing sufficiently in the university research needed to train the U.S. work force. Scientific training of the oil and gas work force is a task best done by the Petroleum Engineering departments in this country and requires the continuous support of the U.S. DOE.

One cannot maintain excellence in education at a research university without funding for research for faculty to refine their skills and for graduate-student education. No other program in the Federal Government provides support for the broad range of topics in Petroleum Engineering provided by this program. No other discipline in the sciences or engineering is expected to fund long-term research without help from the Federal Government. The loss of this DOE program would cripple Petroleum Engineering education throughout the United States.

The need to support Petroleum Engineering education in the United States is severe. The loss of Petroleum Engineering programs in the United States has become a critical problem. In 1986 there were more than 30 accredited Petroleum Engineering programs in the United States. Today the United States is left with only 18. In the mid-1980's, during the last oil-price rise, there were over 1,400 graduates per year in Petroleum Engineering; today there are only about 375 students graduating from Petroleum Engineering programs. The average age of petroleum engineers working in the United States is 52; the number of students we are graduating from our current programs is not enough to replace the retiring engineers, let alone expand the work force. This has led to a shortage of petroleum engineers and, hence, fierce competition among the oil companies. More important, unlike 1980's, when most of the oil companies who could hire other types of engineers and train them to be petroleum engineers through internal training programs, do not have those training programs. All companies coming on campus today prefer to hire petroleum engineers, hence the demand will continue to grow. Another key difference from 1980's is that unlike most of the oil companies that time, who actively had internal research programs, companies today have largely abandoned research activities to the universities and service companies. This has further increased the need for conducting both fundamental and applied research in Petroleum Engineering Departments. We need the support of DOE for fulfilling this role.

Most conventional oil and natural gas reserves have already been discovered. We are going to need more expertise and technology to explore and exploit the more challenging, unconventional resources that still exist, if we are to meet America's future energy needs. If these programs so vital to the training of the professionals that provide our energy needs are cut, the United States will be even more dependent on oil and natural gas supplied from overseas, much of it from unstable regions of the world.

The petroleum and natural gas industries have a multi-billion dollar impact on the U.S. economy, and over 400,000 U.S. citizens have good-paying jobs because of the petroleum industry. The demands for oil and natural gas continue to grow each year, with an expected annual increase of at least 2 percent in the foreseeable future. Large amounts of oil from mature or unexplored basins in the United States can be produced with improved technology that can be developed under the DOE oil and gas technologies program.

We urge you to support this important appropriation that will provide the citizens of this great country the needed access to the products and services that make the United States the most technologically advanced country in the world. We encourage you and your fellow Senators on the committee to restore the fiscal year 2007

appropriation for DOE oil and gas technologies programs to their fiscal year 2006 level of \$64 million.

Respectfully,

DR. MOHAN KELKAR,
*The University of Tulsa, on behalf of the Association of U.S. Petroleum
Engineering Department Heads:*

DR. SAM AMERI,
West Virginia University

DR. BOB CHASE,
Marietta College

DR. SHARI DUNN-NORMAN,
University of Missouri—Rolla

DR. THOMAS ENGLER,
New Mexico Institute of Mining & Technology

DR. IRAJ ERSHAGHI,
University of Southern California

DR. TURGAY ERTEKIN,
Penn State University

DR. ALI GHALAMBOR,
University of Louisiana—Lafayette

DR. LLOYD HEINZE,
Texas Tech University

DR. STEVE HOLDITCH,
Texas A&M University

DR. ROLAND HORNE,
Stanford University

DR. MOHAN KELKAR,
The University of Tulsa

DR. SANTANU KHATANIAR,
University of Alaska—Fairbanks

DR. DEAN OLIVER,
University of Oklahoma

DR. WILLIAM ROSSEN,
University of Texas at Austin

DR. STEVE SEARS,
Louisiana State University

DR. JALAL TORABZADEH,
California State University—Long Beach

DR. CRAIG VAN KIRK,
Colorado School of Mines

DR. LAURENCE WEATHERLEY,
University of Kansas.

PREPARED STATEMENT OF THE UNITED STATES ADVANCED CERAMICS ASSOCIATION

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the members of the U.S. Advanced Ceramics Association (USACA), I would like to thank you for the opportunity to submit testimony on the funding for Science Research in the Department of Energy's fiscal year 2007 Congressional Budget Request. We would like to propose a comprehensive and cost-effective means of defining national needs for advanced, high temperature ceramic materials—a study during fiscal year 2007 to complete a Technology Investment Roadmap for Advanced Ceramics. This would be included under the American Competitiveness Initiative. We request \$375,000 for an independent report to Congress, to be completed by February 15, 2007, that would explore and design a competitive, multi-year Federal and industry cost-shared program to research, demonstrate and develop advanced ceramics. An advisory oversight panel would be formed, and USACA would retain an independent contractor to perform the analytical work.

For over 20 years, we have been an association dedicated to pursuing the research, development and demonstration of advanced ceramic materials in many and varied aerospace, defense and energy applications. Our members have plants and facilities in over 45 Congressional Districts and 20 States.

SUMMARY

My testimony will make the following points that reflect USACA's policy priorities:

- Support for the concepts in the President's American Competitiveness Initiative;
- Added funding needed for a Technology Investment Roadmap for Advanced Ceramics.

The U.S. Advanced Ceramics Association (USACA) believes in the enduring ability of U.S. technology to create jobs and enhance our energy security. We strongly support the President's American Competitiveness Initiative announced in the State of the Union address and as part of the Department of Energy's fiscal year 2007 Budget Request to Congress. As Secretary Samuel Bodman explained, "We need to restore U.S. dominance in the physical sciences . . ." and "Materials Science" is an explicit part of this planning.

We would like to suggest some possible report language for the Energy and Water Appropriations bill that: directs the Secretary to "initiate a Technology Investment Roadmap for Advanced Ceramics, to be completed by February 15, 2007. This study shall explore and design a competitive, multiyear cost shared program with industry to research, demonstrate and develop advanced ceramic materials."

In the past three decades, breakthroughs in advanced ceramics have enabled significant new technology capabilities that are now having far-reaching impacts on the U.S. economy and defense capability. For example, ceramic catalytic converters are responsible for dramatically reducing automobile emissions. Long-life bearings are used in a wide range of high-performance energy and military applications to improve overall system performance and reduce friction, while ceramic armor plates are stopping bullets and shrapnel and saving the lives of soldiers and police. The technological breakthroughs that have made these life-changing innovations possible are the direct result of sustained RD&D investment by both industry and government.

Now, the challenges for advanced ceramics are growing, fueled by the need to create alternative energy technologies, more efficient, cleaner environmental systems, and higher performance military and aerospace systems. The Nation needs more from the industry, but there are some critical ceramic technologies that are still left in the early stages of product innovation cycles, and promising ideas sit in dark closets.

WHAT VALUE DO ADVANCED CERAMICS BRING?

Advanced ceramics are enabling materials and provide added performance and value to manufactured products. Ceramics can withstand extreme heat, high pressures and corrosive environments. They are simultaneously lightweight, strong, and durable. These attributes result in more efficient power conversion for many different methods and fuels, including hydrogen fuel cells, nuclear power, gas turbines and other engines. They also translate into tougher materials that can withstand the high temperatures of coal combustion systems, the extremes of jet engine turbines, and the force of an enemy bullet or roadside bomb.

There are several key reasons why research, development and demonstration of advanced ceramics materials are premium public investments, including:

- Advanced ceramics can increase U.S. industry competitiveness in several key global technology markets. Investments here will reverse the trend toward the movement of U.S. technology offshore to foreign enterprises.
- Investments will retain and expand U.S. jobs in new product manufacturing.
- The materials can tolerate the very high temperatures necessary for the most efficient and cleanest energy conversion technologies, whether hydrogen production from abundant domestic coal resources, or advanced nuclear reactors.
- The direct benefits will help to reduce energy consumption and carbon emissions in markets served over the next 20 years.
- Investments here would significantly reduce the normal 15–20 year product development and introduction cycle for advanced materials, speeding their use in critical energy and defense applications.

The Roadmap would have several purposes:

- examine the history and effectiveness of Federal and industry cost-shared investments already made in advanced ceramics research and development;
- highlight key factors in the success of criteria projects;
- identify the critical future applications for both civil and military needs;
- explore new types of partnership arrangements between industry and government, management alternatives and incentives for early market transition and Federal purchase;

—recommend to the Congress a multiyear, competitive, premium public investment strategy for the research, development, demonstration and deployment of advanced ceramics in critical applications.

We hope that this proposal warrants your support in the fiscal year 2007 Federal budget. We thank you for your strong interest in the advancement of technology, and its critical role in economic growth and national security.

On behalf of USACA members: Ceramic Tubular Products, LLC; Clariant Technologies; COI Ceramics, Inc.; Corning, Inc.; Deere and Co.; Extreme Composite Products, Inc.; GE Power Systems Composites, LLC; Goodrich Corporation; KiON Defense Technologies; Refractron Technologies Corporation; Saint-Gobain High-Performance Materials; Siemens Power Generation; Starfire Systems, Inc.; Surmet Corporation; Synterials, Inc.; UT-Battelle.

PREPARED STATEMENT OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

To the chair and members of the subcommittee, thank you for this opportunity for the American Association of Petroleum Geologists (AAPG) to provide its written perspective on the fiscal year 2007 budget for oil and natural gas research and development (R&D) programs within the subcommittee's jurisdiction.

The administration's budget submitted earlier this year contains significant reductions for the Department of Energy (DOE), Office of Fossil Energy, including the elimination of the oil and gas technology programs. AAPG requests restoration of funding for DOE Fossil Energy oil and natural gas technology programs as a matter of national policy. AAPG endorses restoration of DOE's oil and natural gas research program funding to at least 2006 levels of \$64 million. AAPG also endorses full funding for the Energy Policy Act of 2005 initiative titled Ultra-Deepwater and Unconventional Natural Gas and other Petroleum Resources at \$100 million. The AAPG firmly supports funding of the methane hydrates technology program (reauthorized in the Energy Policy Act of 2005) at \$20 million.

AAPG, an international geoscience organization, is the world's largest professional geological society representing over 30,000 members. In the United States we have more than 20,000 members, the majority of whom are independents or consultants to the domestic petroleum industry. The purpose of AAPG is to advance the science of geology, foster scientific research, promote technology and advance the well-being of its members. Included among its members are numerous CEOs, managers, directors, independent/consulting geoscientists, educators, researchers, public servants and students. AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum and coal geology play in energy security and our society.

AAPG applauds the administration's efforts to enhance research in areas that diversify the options to supply energy in our economy. AAPG supports the continued efforts to develop technologies to conserve energy and technologies that will permit the economy to perform more efficiently with reduced energy input. However, as a professional organization, AAPG's 30,000 members understand that fossil fuels will continue to be a mainstay of the U.S. energy economy and the world's energy economy for decades to come. Moreover, oil and natural gas will provide many of the raw materials that allow us to function in our modern world.

The Association does not support the oversimplified projection of the state of the industry as presented by the administration's budget submission. The projection does not accurately reflect the needs of the smaller companies and individuals who have supported DOE's efforts and have benefited from the historical research conducted under DOE's programs. They are the community of independent and small producers that drill the preponderance of the domestic wells, and produce the bulk of the domestic natural gas and crude oil. They are the community who reinvest their profits in the search and development of domestic resources. They are the community whose production serves the Nation's energy needs directly. They are the community for whom the DOE programs provide technology benefits that serve the American public, the Nation and its security.

AAPG sees three vital needs that are supported by the DOE oil and natural gas R&D programs. First, the effort sustains long-term viability for recovery of the Nation's oil and natural gas endowment. Maintenance of domestic industry capability is vital to the security and well-being of the Nation. Second, publicly-funded research will promote and insure technology capabilities that continue to foster U.S. technical and economic preeminence in a rapidly changing global economy. Third and often understated is the fact that these programs contribute substantially to sustaining the institutions that educate, train and nurture a capable and efficient workforce for the Nation's energy industry.

The AAPG believe that the justification for publicly-funded research remains strong and largely independent of the price at which crude oil and natural gas commodities trade in any particular time period. The primary recipients of the technology developed with public funds are those companies/individuals who have no accessible alternative mechanism for aggregating the resources which would foster that research. They are the community of independent and small producers, who drill 90 percent of the wells, produce 85 percent of the domestic natural gas and 60 percent of the domestic crude oil in the United States. They represent a large variety of engineers, geologists, and investors that are not represented by any single society or association. AAPG, with its extensive membership represents only one portion of the diverse community of professionals and skilled technical trades involved in producing the oil and gas resources that this Nation depends on. If anything is true, research is even more important in times of high oil prices, so that users of the technology developed from the research can translate in continued domestic production.

Our Nation is the world's largest consumer and net importer of energy. According to the Energy Information Administration, during 2005, the United States consumed 20.66 million barrels of oil per day, with as much as 15.2 million barrels supplied by imports of crude and products during November 2005. Our national energy and economic security depends on a vibrant domestic oil and gas industry. While the price of crude oil is established by a global market, the costs of exploration, development, and production are influenced strongly by the application of discoveries in geosciences and new developments in technology. Thus, focused R&D can make a significant contribution to sustaining our domestic petroleum industry and to national energy security—it is important.

During the recent past, energy companies as well as most companies have worked to reduce operating costs by adopting outsourcing approaches. This has caused an unfortunate side effect of outsourcing technical preeminence in a large number of areas where the United States has been a global science and technology leader. The AAPG believes that this phenomenon is increasingly recognized as a national security issue. While Legislative and Executive Branch initiatives are responding to the broad erosion of science and technology capability, focused initiatives like the DOE oil and natural gas R&D programs that have and will continue to foster our technology preeminence, should not be overlooked or sacrificed. Such programs have been successful in the past and should be continued for the Nation's energy well-being.

Many of the more than 40 national and global geoscience-related professional organizations have reported shrinking and aging memberships over the past 2 decades. In the energy arena this is reflected in fewer and smaller, degree-granting, college and university departments and loss of technical training institutions associated with the industry. Currently, the demand for trained industry professionals and qualified trade specialists has grown in response to growing world-wide demand for oil, natural gas and coal and yet the fossil fuel industry is facing serious shortages in trained and experienced employees.

In effect, and for a number of reasons, the pipeline that has supplied this workforce is not working well. Historically, a significant portion of DOE's oil and natural gas R&D program has flowed to and through these educational and training institutions, where funds have supported faculty and attracted student researchers. No other Federal program contributes effectively to these needs. AAPG believes that funding DOE's oil and natural gas technology is absolutely vital to sustaining the supply of trained and experienced individuals in the petroleum industry workforce into this century. The lack of qualified graduates to replace our graying membership may become a national security issue within a decade if not addressed in the near term.

The Association is aware of and endorses the approach to funding research and development outlined in the Energy Policy Act of 2005. It makes very good sense to our membership. Focusing DOE emphasis on longer-term technology development and on research that the industry would not ordinarily undertake within its purview, while providing a new focus that shifts other operationally-oriented research into the arena where the private sector plays a more important role in guiding and conducting research.

AAPG supports funding for DOE R&D programs on natural gas hydrates; advanced recovery technologies; next-generation limited-footprint exploration and development technologies; fundamental studies that lead to better understanding of reservoir architecture, unconventional resources and continuous reservoirs; technology transfer to producers; and workforce training and university programs that ensure future critical national infrastructure capabilities. These programs con-

tribute to the basic understanding of the resource, and pave the way for cleaner and lower-impact extraction of the energy resources vital to National security.

Public support for technology transfer is an area that AAPG considers to be a viable use of public funds. In a number of areas like the Illinois Basin, the primary and sometimes the only source of information on new technologies is the Petroleum Technology Transfer Council. The efforts of the Council, funded under DOE's technology program and heavily fortified by academic participation, are easily accessed by smaller producers who lack the time, resources and knowledge to independently pursue technological improvements in their operations. Accelerating technology uptake is seen as a viable approach to more efficient discovery, more complete recovery, and reduction of the impact and footprint of oil and natural gas operation.

Thank you for the opportunity to present this testimony to the committee.

PREPARED STATEMENT OF THE SOCIETY OF NUCLEAR MEDICINE

The Society of Nuclear Medicine (SNM) appreciates the opportunity to submit written comments for the record regarding funding in fiscal year 2007 at the Department of Energy (DOE). SNM is an international scientific and professional organization with over 16,000 members dedicated to promoting the science, technology, and practical application of nuclear medicine.

In fiscal year 2006, the Federal Government abandoned its 50-year commitment to funding vital nuclear medicine research by eliminating funding for the Medical Applications and Measurement Science Program at DOE and making no accommodation to transition nuclear medicine programs to another Federal department. In past years, nuclear researchers have used Federal funding within DOE to make major accomplishments benefiting millions of patients with heart, cancer, and brain diseases. The loss of Federal funding for nuclear research will adversely impact future innovation in the field. For that reason, SNM advocates the immediate restoration of \$37 million in funding for the Medical Applications and Measurement Science Program at the DOE. In the long term, SNM also believes that a permanent home and specific funding to support basic science research in nuclear medicine are essential; and SNM is prepared to work with the committee to identify such a home at DOE or another agency, such as the National Institutes of Health (NIH).

WHAT IS NUCLEAR MEDICINE?

Nuclear medicine is an established specialty that performs noninvasive molecular imaging procedures to diagnose and treat diseases and to determine the effectiveness of therapeutic treatments—whether surgical, chemical, or radiation. It contributes extensively to the management of patients with cancers of the brain, breast, blood, bone, bone marrow, liver, lungs, pancreas, thyroid, ovaries, and prostate, and serious disorders of the heart, brain, and kidneys, to name a few. In fact, recent advances in the diagnosis of Alzheimer's disease can be attributed to nuclear medicine imaging procedures.

Annually, more than 20 million men, women, and children need noninvasive molecular/nuclear medicine procedures. These safe, cost-effective procedures include positron emission tomography (PET) scans to diagnose and monitor treatment in cancer, cardiac stress tests to analyze heart function, bone scans for orthopedic injuries, and lung scans for blood clots. Patients undergo procedures to diagnose liver and gall bladder functional abnormalities and to diagnose and treat hyperthyroidism and thyroid cancer.

LACK OF FEDERAL FUNDING THREATENS FUTURE INNOVATIONS

The mission of the Medical Applications and Measurement Science Program at the DOE is to deliver relevant scientific knowledge that will lead to innovative diagnostic and treatment technologies for human health. The modern era of nuclear medicine is an outgrowth of the original charge of the Atomic Energy Commission (AEC) to exploit nuclear energy to promote human health. This program supports directed nuclear medicine research through radiopharmaceutical development and molecular nuclear medicine activities to study uses of radionuclides for non-invasive diagnosis and targeted, internal molecular radiotherapy.

Over the years, the DOE Medical Applications and Measurement Science Program has generated advances in the field of molecular/nuclear medicine. For example, DOE funding provided the resources necessary for molecular/nuclear medicine professionals to develop PET scanners to diagnose and monitor treatment in cancer. PET scans offer significant advantages over CT and MRI scans in diagnosing disease and are more effective in identifying whether cancer is present or not, if it has

spread, if it is responding to treatment, and if a person is cancer free after treatment. In fact, the DOE has stated that this program supports "research in universities and in the National Laboratories, occupies a critical and unique niche in the field of radiopharmaceutical research. The NIH relies on our basic research to enable them to initiate clinical trials."

The majority of the advances in molecular/nuclear medicine have been sponsored by the DOE, including:

- Smaller, More Versatile PET Scanners.*—Brookhaven National Laboratory (BNL) has completed a prototype mobile PET scanner, which will record images in the awake animal. The mobile PET will be able to acquire positron-generated images in the absence of anesthesia-induced coma and correct for motion of the animal. The long-term goal is to develop PET instrumentation able to diagnose neuro-psychiatric disorders in children.
- Highest Resolution PET Scanner Developed.*—Scientists at the Lawrence Berkeley National Laboratory (LBNL) have developed the world's most sensitive PET scanner. The instrument is 10 times more sensitive than a conventional PET scanner and became operational in 2005.
- Imaging Gene Expression in Cancer Cells.*—Images of tumors in whole animals that detect the expression of three cancer genes were accomplished for the first time by investigators at Thomas Jefferson University and the University of Massachusetts Medical Center. This advanced imaging technology will lead to the detection of cancer in humans using cancer cell genetic profiling.
- Modeling Radiation Damage to the Lung.*—Treatment of thyroid disease and lymphomas using radioisotopes can cause disabling lung disease. Investigators at Johns Hopkins University have developed a Monte Carlo model that can be used to determine the probability of lung toxicity and be incorporated into a therapeutic regimen. This model will optimize the dose of radioactivity delivered to cancer cells and avoid untoward effects on the lung.
- New Radiopharmaceuticals With Important Clinical Applications.*—The DOE radiopharmaceutical science program has developed a number of innovative radiotracers at the University of California at Irvine for the early diagnosis of neuro-psychiatric illnesses, including Alzheimer's disease, schizophrenia, depression, and anxiety disorders.
- Rapid Preparation of Radiopharmaceuticals for Clinical Use.*—The DOE-sponsored program at the University of Tennessee has developed a new method for preparing radiopharmaceuticals by placing a boron-based salt at the position that will be occupied by the radiohalogen. The method has been used to prepare a variety of cancer-imaging agents.

With restored DOE funding, essential molecular/nuclear medicine research will continue at universities, research institutions, national laboratories, and small businesses. Moreover, research with radiochemistry, genomic sciences, and structural biology will be able to usher in a new era of mapping the human brain and using specific radiotracers and instruments, to more precisely diagnose neuro-psychiatric illnesses and cancer.

The future of life-saving therapies and cutting-edge research in molecular/nuclear medicine and imaging depends on funding for the DOE Medical Applications and Measurement Science Program. Therefore, SNM recommends that funding for the DOE Medical Applications and Measurement Science Program be restored to the fiscal year 2005 funding level of \$37 million.

In addition, to gain the full benefits of nuclear medicine, it is important to ensure that nuclear medicine researchers have a steady supply of radionuclides. One way to accomplish this goal would be to create a National Radionuclide Enhancement Production program at the DOE that would meet the Nation's medical and homeland security needs.

CONCLUSION

By restoring funding to the Medical Applications and Measurement Science Program at the DOE or by making an appropriate provision for nuclear research funding within another Federal department, policy makers will keep our Nation at the forefront of nuclear medicine research and innovation. We thank you for the opportunity to present our views on funding for these initiatives at the DOE and would be pleased to answer any questions you may have.

PREPARED STATEMENT OF THE AMERICAN PUBLIC POWER ASSOCIATION

The American Public Power Association (APPA) is the national service organization representing the interests of over 2,000 municipal and other State and locally

owned utilities throughout the United States (all but Hawaii). Collectively, public power utilities deliver electricity to one of every seven electric consumers (approximately 43 million people). We appreciate the opportunity to submit this statement outlining our fiscal year 2007 funding priorities within the Energy and Water, and Related Agencies Subcommittee's jurisdiction.

FEDERAL POWER MARKETING ADMINISTRATIONS (PMAS)

Power Marketing Administration Interest Rate Proposal.—The administration's fiscal year 2007 budget includes a recommendation that would raise electricity rates by changing the interest rate charged by the Southeastern Power Administration (SEPA), the Southwestern Power Administration (SWPA), and the Western Area Power Administration (WAPA) on all new investments in projects whose interest rates are not set by law. Specifically, the Department of Energy's (DOE) budget calls for the these three Power Marketing Administrations (PMAs) to set their interest rates at the level that government corporations pay to borrow funds from the Federal Government. To implement this proposal, DOE will amend the regulation that governs how the PMAs establish their rates and will do so administratively, without any consultation with or action from Congress.

The administration's budget proposes to increase the interest rate charged on all new investments in these hydroelectric facilities to a level that is charged government corporations—the rate that reflects the interest cost for the Federal Government to provide loans to government corporations. SEPA, SWPA and WAPA are neither government corporations nor do they borrow funds from the U.S. Treasury. All rates are set to recover the dollars appropriated by Congress for the investment in the hydroelectric facilities and to cover the cost to operate these projects. If implemented, this proposal could increase rates considerably for customers served by most of the Power Marketing Administrations.

This proposal creates a serious precedent and should be rejected, because: (1) the process for implementing the proposal can be done without congressional involvement or approval; (2) the proposal would arbitrarily raise revenue from electric customers for deficit reduction; and (3) the proposal reverses decades of rate making precedent and accepted cost recovery practices by administrative fiat. We urge the subcommittee to block the implementation of this proposal.

Bonneville Power Administration Rate Proposal.—Also included in DOE's fiscal year 2007 budget is a proposed administrative action that would direct the Bonneville Power Administration (BPA) to use any net "secondary market revenues" in excess of \$500 million per year towards accelerated Federal debt repayment. Because the change would be made through the rulemaking process, congressional approval is not needed for the policy to go into effect. The Office of Management and Budget (OMB) calculates that this plan would provide a total of \$924 million from fiscal year 2007–2016 from these "higher-than-historical net secondary revenues." OMB believes that this measure is needed to free up BPA borrowing authority. However, experts in the Northwest have calculated that the proposal would result in a 10 percent wholesale rate increase that BPA would be forced to pass on to ratepayers. The Congressional Budget Office has calculated that the effect of the administration's proposal on the U.S. Treasury would be \$300 million over 10 years beginning in 2008, which means it will have no impact on the 2007 fiscal year budget. We urge the subcommittee to block the implementation of this proposal.

Purchase Power and Wheeling.—We urge the subcommittee to authorize appropriate levels for use of receipts so that the Western Area Power Administration (WAPA), the Southeastern Power Administration (SEPA) and the Southwestern Power Administration (SWPA) can continue to purchase and wheel electric power to their municipal and rural electric cooperative customers. Although appropriations are no longer needed to initiate the purchase power and wheeling (PP&W) process, the subcommittee continues to establish ceilings on the use of receipts for this important function. The PP&W arrangement is effective, has no impact on the Federal budget, and is supported by the PMA customers who pay the costs. We agree with the administration's budget requests for PP&W for fiscal year 2007, which are as follows: \$274.9 million for Western Area Power Administration (WAPA); \$34.4 million for Southeastern Power Administration (SEPA); and \$3 million for Southwestern Power Administration (SWPA).

Costs of Increased Security at Federal Multi-Purpose Projects.—Following the attacks of September 11, 2001, the Bureau of Reclamation (Bureau) embarked upon an aggressive program to enhance the security of Federal dams to protect the facilities against terrorist attacks. Based on historical precedent, the Bureau initially determined that the costs of increased security measures should remain a non-reimbursable obligation of the Federal Government. In fiscal year 2005, however, the

Bureau reversed its position and asked for some of these costs to be reimbursed from power customers. That year, Congress disagreed with the Bureau's request that these expenses be reimbursable, but in the Energy and Water Development Appropriations Act of 2006 (HR 2419, November 7, 2005), Congress directed that \$10 million of the estimated \$18 million for guards and patrols be provided by reimbursable funding. The bill also directed the Bureau to provide a report to Congress within 60 days that would delineate the planned reimbursable security costs by project. The report (issued in March 2006) is similar to the previous (May 2005) report, except that it also includes "facility fortification upgrades" as a reimbursable cost. Previously, the Bureau had assured its stakeholders that only the costs of guards and patrols would be reimbursable. This additional obligation in essence makes everything reimbursable at some point. Regardless of the details of the Bureau's report, APPA continues to believe in the validity of the historic rationale established in the 1942 and 1943 Interior Department Appropriation Acts for treating costs of increased security at multi-purpose Federal projects as non-reimbursable obligations of the Federal Government. We therefore urge Congress to add language to the Energy and Water Development Appropriations Act of 2007 to clarify that all costs of increased security at dams owned and operated by the Bureau be non-reimbursable.

Renewable Energy Production Incentive (REPI) and Renewable Energy Programs.—The Department of Energy's REPI program was created in 1992's Energy Policy Act (EPAct) as a counterpart to the renewable energy production tax credits made available to for-profit utilities, and was recently reauthorized through 2016 in the Energy Policy Act of 2005 (EPAct05). EPAct05 authorizes DOE to make direct payments to not-for-profit public power systems and rural electric cooperatives at the rate of 1.5 cents per kWh (1.9 cents when adjusted for inflation) from electricity generated from a variety of renewable projects. According to DOE sources, in order to fully fund all past and current REPI applicants, over \$80 million would be needed for fiscal year 2007. Despite the demonstrated need, however, DOE has asked for only \$4.96 million for fiscal year 2007, citing budgetary constraints. We greatly appreciate the subcommittee's interest in this small but important program as evidenced by its support of funding for the program either at or above the administration's budget requests in the last few years despite the tight budgetary environment. We urge the subcommittee to continue its support with an even greater increase.

Energy Information Administration.—In order to fulfill the Energy Information Administration's (EIA) data collection responsibility in regard to the electric power industry, it has had to revise and expand its data collection to include new participants. EIA now collects information from all sectors of the power industry: investor-owned utilities, rural electric cooperatives, public power systems and Federal utilities, as well as power marketers and non-utility generators. Most EIA data forms are filled out by all industry sectors. However, the Federal Energy Regulatory Commission (FERC) collects data from its jurisdictional utilities (investor-owned utilities) and the Department of Agriculture's Rural Utilities Service (RUS) collects information from its utility borrowers (rural electric cooperatives). EIA does not duplicate electricity data collected by these Federal agencies. Thus EIA uses a small number of forms to collect comparable information from electric industry sectors not subject to the FERC or RUS reporting requirements. EIA-412 is one of these forms. Funding for the distribution, collection and analysis of EIA-412 was eliminated by EIA in fiscal year 2005, but could be reinstated if EIA chose to allocate a portion of its budget to the collection of the EIA-412 data. We urge the subcommittee to encourage the EIA to provide funding for this form in fiscal year 2007 within the context of its overall appropriation. The indefinite elimination of form EIA-412 will leave a gap in the electricity industry's data coverage.

Storage for High-level Nuclear Waste.—We support the administration's efforts to finalize the location of a permanent storage site at Yucca Mountain, Nevada. The President requested \$544.5 million for fiscal year 2007 for the nuclear waste repository at Yucca Mountain is a step in the right direction and we encourage the subcommittee to provide funding for the project at or above the administration's request.

Advanced Hydropower Turbine Program.—APPA is disappointed with the administration's decision to phase out this important program to develop a hydroelectric turbine that will protect fish and other aquatic habitats while continuing to allow for the production of emissions-free hydroelectric power. We urge the subcommittee to consider providing funding for this important initiative.

Energy Conservation.—APPA appreciates the subcommittee's interest in energy conservation and efficiency programs at DOE and we hope that the subcommittee will once again allocate a funding level over and above the administration's request for fiscal year 2007.

Weatherization and Intergovernmental Activities.—APPA supports the administration's request of \$225 million for fiscal year 2007 for helping to increase the efficiency of commercial and residential buildings, including weatherization assistance, the State and community energy conservation programs.

Clean Coal Power Initiative and FutureGen.—APPA is disappointed with the administration's request of only \$5 million for fiscal year 2007 for the Clean Coal Power Initiative. We urge the subcommittee to substantially increase the funding for this program to be consistent with the President's commitment to fund this program at \$2 billion over 10 years. We also urge the subcommittee to provide \$54 million in new funding for fiscal year 2007 for the FutureGen program, as opposed to drawing from deferred funds from fiscal year 2006 as the administration proposes.

Distributed Generation Fuel Cells.—APPA is disappointed with the administration's request of \$63.35 million for fiscal year 2007 for distributed generation fuel cell research and development, and urges the subcommittee to allocate additional funding for this program.

Hydrogen Fuel Initiative and Vehicle Technologies.—APPA supports the administration's efforts to improve the feasibility of making available low-cost hydrogen fuel cells, and support its request of \$289.5 million for hydrogen research and development in fiscal year 2007. APPA also supports the administration's request for \$166 million for vehicle technologies that would apply hydrogen fuel cell technology to vehicles as well as provide for research for hybrid and electric vehicle technologies to facilitate widespread deployment of these technologies.

Navajo Electrification Demonstration Program.—APPA supports full funding for the Navajo Electrification Demonstration Program at its \$15 million authorized funding level for fiscal year 2007. The purpose of the program is to provide electric power to the estimated 18,000 occupied structures in the Navajo Nation that lack electric power.

National Climate Change Technology Initiative.—APPA supports the administration's efforts to promote greenhouse gas reductions through voluntary programs and investments in new technologies. We are therefore disappointed that the administration has only requested \$1 million for fiscal year 2007 for the policy office of the National Climate Change Technology Initiative. We encourage the subcommittee to consider allocating additional funds for this program.

Federal Energy Regulatory Commission (FERC).—DOE has requested \$230.8 million for the overall operations of the Federal Energy Regulatory Commission (FERC) for fiscal year 2007. APPA supports this request, which is an appropriate increase over fiscal year 2006 given FERC's additional responsibilities under EPAct05.

PREPARED STATEMENT OF THE ALLIANCE TO SAVE ENERGY

The Alliance to Save Energy (the Alliance) is a bipartisan, nonprofit coalition of business, government, environmental, and consumer leaders committed to promoting energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. The Alliance, founded in 1977 by Senators Charles Percy and Hubert Humphrey, currently enjoys the leadership of Senator Mark Pryor as Chairman; Washington Gas Chairman and CEO James DeGraffenreidt, Jr. as Co-Chairman; and Representatives Ralph Hall, Zach Wamp and Ed Markey and Senators Jeff Bingaman, Susan Collins and Jim Jeffords as its Vice-Chairs. More than 100 companies and organizations currently support the Alliance as Associates. The Alliance recommends increases of \$17.9 million in several existing energy-efficiency deployment programs, \$15 million for newly authorized programs, and increased funding for building energy-efficiency research in fiscal year 2007, compared to last year's appropriated levels.

BACKGROUND

Rationale for Federal Energy-Efficiency Programs.—We understand that budgets are tight, but we have seen that the costs of not addressing energy waste are just too high. Gasoline and natural gas prices have doubled in the last few years, and electricity prices also reached all-time highs. All told, recent energy price increases cost American families and businesses over \$300 billion last year. These high prices have caused plant closings and loss of manufacturing jobs, and have made many low-income homeowners unable to pay their heating bills. President Bush recognized that our long-term energy security and environmental issues due to our wasteful use of fossil fuels are equally serious when he called for ending our "addiction" to oil. The Energy Information Administration projects that without further action our fossil fuel use will rise by a third by 2030, and our imports will rise by a half.

Improved energy efficiency is the best near-term strategy to begin balancing demand and supply and bring energy prices down, and is a key component of a long-term energy strategy. Energy efficiency is the Nation's greatest energy resource—we now save more energy each year from energy efficiency than we get from any single energy source, including oil, natural gas, coal, or nuclear power. The Alliance to Save Energy estimates that if we tried to run today's economy without the energy-efficiency improvements that have taken place since 1973, we would need 43 percent more energy supplies than we use now.

A Record of Success.—DOE programs play a key role in these savings through the research and development (R&D) of new energy-efficiency technologies, and by helping these technologies achieve widespread use. These programs reduce energy consumption, dependence on foreign oil, and energy costs. They also help create jobs in the United States and decrease harmful pollution. A 2001 National Research Council report found that every \$1 invested in 17 DOE energy-efficiency R&D programs returned nearly \$20 to the U.S. economy in the form of new products, new jobs, and energy cost savings to American homes and businesses. Environmental benefits were estimated to be of a similar magnitude.

Budget Authorizations and Studies.—A series of reports and bills have supported a major increase in funding for DOE energy-efficiency programs. The Energy Policy Act of 2005 (EPAct 2005) authorized \$783 million for energy-efficiency R&D in fiscal year 2007, an additional \$240 million for distributed energy and other electric R&D, and \$820 million for various deployment programs. This follows calls for expanding energy-efficiency research by the National Commission on Energy Policy, the President's Committee of Advisors on Science and Technology, the Energy Futures Coalition, and the President's National Energy Policy.

Summary of the President's Request.—The President's overall fiscal year 2007 budget request for energy-efficiency programs at DOE's Office of Energy Efficiency and Renewable Energy is \$517 million, down \$111 million (18 percent) from the fiscal year 2006 appropriation, and \$78 million below the administration's fiscal year 2006 request. This large cut follows a gradual slide from \$694 million appropriated for these energy-efficiency programs in fiscal year 2002. Funding for these programs is down one-third (34 percent) since 2002 after inflation. In addition, the request for electricity R&D programs, many of which focus on efficiency, is \$96 million, down \$41 million (30 percent) from the fiscal year 2006 appropriation. After accounting for some program transfers, funding for buildings, industry, and vehicles R&D also is reduced. But some of the biggest cuts are to deployment programs, including weatherization of low-income homes, support for State building codes, industrial energy audits, and Federal energy management.

ALLIANCE RECOMMENDATIONS

In order to address the critical energy problems facing our Nation, the Alliance recommends funding for DOE energy-efficiency programs in line with the authorized levels. However, given fiscal realities, we have included much smaller specific funding requests below.

The impact of DOE energy-efficiency programs has been multiplied by the combination of research to develop new technologies, voluntary deployment and market transformation programs to move them into the marketplace, and standards and codes to set a minimum threshold for using cost-effective technologies. All three legs are vital. However, the Alliance believes that programs that focus on near-term energy-efficiency deployment are especially critical right now to meeting our Nation's natural gas and electricity needs. The administration's proposed elimination of the Gateway Deployment function and cuts to other key deployment programs are not consistent with achieving our national energy policy goals of reducing high energy costs and reducing our reliance on imported oil.

It is important that the program increases in the administration's budget and proposed below not be paid for through cuts to other highly-effective efficiency programs, which also address critical national energy needs. While we support the fuel cell and biofuels programs, they do not take the place of core programs that can have broader, more certain, and more near-term energy savings impacts. In particular, the Alliance opposes repeated cuts that now threaten the viability of Industrial Technologies research programs and the dramatic proposed cuts to the distributed energy R&D program and the Weatherization Assistance Program.

Existing Deployment Programs (Office of Energy Efficiency and Renewable Energy)

Building Codes Training and Assistance (formerly Weatherization and Intergovernmental Programs).—While residential and commercial building codes are implemented at the State level, the States rely on DOE for technical specifications, training, and implementation assistance. We estimate that building energy codes could

save 7.2 quads of energy by 2025. The new 2006 IECC model residential code includes measures to simplify the code and ease implementation, and thus presents exciting opportunities to increase code adoption and compliance. EPA 2005 authorized \$25 million a year for building codes, including a new program to improve compliance. Yet the administration has proposed eliminating funding for Building Codes Training and Assistance. The Alliance recommends a \$4.5 million increase above the fiscal year 2006 appropriations level, for total funding of \$9.0 million.

Industrial Assessment Centers and Best Practices (Industrial Technologies—Cross-cutting).—One of the most effective DOE industrial programs conducts plant-wide energy assessments, develops diagnostic software, conducts training, develops technical references, and demonstrates success stories. Oak Ridge National Laboratory reports that DOE-ITP's Best Practices outreach saved 82 trillion Btu in 2002, worth \$492 million. University-based Industrial Assessment Centers (IAC) have an immediate impact on the competitive performance of hundreds of smaller U.S. factories. The same efforts train industry's next generation of innovators. Yet the administration has proposed to cut IAC by 30 percent. The Alliance recommends the following increases above the fiscal year 2006 appropriations levels:

- a \$2 million increase for Industrial Assessment Centers, for total funding of \$8.4 million,

- a \$3 million increase for Best Practices, for total funding of \$10.9 million.

Federal Energy Management Program.—This program has helped cut Federal building energy waste by 24 percent from 1985–2001—a reduction that now saves Federal taxpayers roughly \$1 billion each year in reduced energy costs. But funding has steadily decreased for this program, even though large savings remain untapped. EPA 2005, in addition to setting aggressive new energy saving targets, requires DOE to implement rules, guidelines, and reports on the targets, Federal building standards, Federal procurement, and metering. A needed funding increase for this program will actually save taxpayer money in lower Federal energy bills. The Alliance recommends a \$3 million increase above the fiscal year 2006 level, for total funding of \$20.0 million.

Equipment Standards and Analysis (Building Technologies).—Appliance standards have already reduced U.S. electricity use by an estimated 2.5 percent (88 billion kWh/year) and reduced peak power demand by approximately 21,000 MW, at a minimal Federal cost and with major energy bill savings to consumers. But the program is already years behind on about 20 standards. EPA 2005 adds rulemakings on three new products, and requires DOE to issue updates on several new legislated standards. DOE has issued an ambitious plan to catch up, and requested a \$1.7 million increase. But more is needed to implement the plan. The Alliance recommends a \$2.5 million increase over the fiscal year 2006 appropriations level for total funding of \$12.7 million.

Energy Star (formerly Weatherization and Intergovernmental Programs).—Energy Star is a successful voluntary deployment program at EPA and DOE that has made it easy for consumers to find and buy many energy-efficient products. In 2004 alone, Energy Star helped Americans save enough energy to power 25 million homes and avoid greenhouse gas emissions equivalent to those from 20 million cars—all while saving \$10 billion on their utility bills. Every Federal dollar spent on the Energy Star program results in an average savings of more than \$75 in consumer energy bills and the reduction of about 3.7 tons of carbon dioxide emissions. With additional funding, the Energy Star program can update its criteria, label additional products, and provide Americans with more information on how to save energy. The Alliance recommends a \$1 million increase over the fiscal year 2006 appropriations level for total funding of \$6.9 million.

New Deployment Programs Authorized in EPCA 2005

Energy Efficiency Public Information Initiative (Program Support).—The quickest way to reduce energy demand and bring high energy prices down is through consumer education. EPCA 2005 (Sec. 134) authorizes \$90 million per year for a public education program to provide consumers the information and encouragement necessary to reduce energy use. Such programs have a proven track record of success, as in the 2001 “Flex Your Power” campaign in California, which significantly reduced consumer electricity demand and assisted in avoiding further black-outs. DOE has contributed a little to effective education campaigns, but much more funding is needed. The Alliance recommends at least \$10 million for this new program.

Energy Efficiency Pilot Program (Office of Electricity Delivery and Energy Reliability).—State and utility energy-efficiency programs have been remarkably successful at reducing electricity demand, strain on the grid, and the need for costly new power plants. However, they have been starved for funds due to electric restructuring. A few States are experimenting with innovative performance-based

policies to use the efficiency resource. EPAct 2005 (Sec. 140) authorizes \$5 million per year for a new program to provide funding to several States to assist in the design and implementation of energy-efficiency resource programs that will lower electricity and natural gas use by at least 0.75 percent a year. The Alliance recommends \$5 million for this new program.

Other Key Programs

Building Technologies R&D.—Energy use by residential and commercial buildings accounts for over one-third of the Nation's total energy consumption. Of all the DOE energy-efficiency programs, Building Technologies continues to yield perhaps the greatest energy savings. The 2001 National Research Council study found that just three small buildings R&D programs—in electronic ballasts for fluorescent lamps, refrigerator compressors, and low-e glass for windows—have already achieved cost savings totaling \$30 billion, at a total Federal cost of about \$12 million. Current buildings research programs, such as advanced windows and solid state (LED) lighting, are equally promising. Yet the administration's proposed budget would reduce overall Building Technologies funding by 7 percent. Buildings R&D should be a priority for funding increases, especially for Windows and Insulation and Materials R&D.

Energy Information Administration (EIA) Energy Consumption Surveys.—EIA's Energy Consumption Surveys provide unique and invaluable data to policy makers, congressional staff, researchers, and industry. The administration's budget request includes \$3.65 million, just enough to continue the Residential, Manufacturing, and Commercial Buildings Energy Consumption Surveys (RECS, MECS, and CBECS) every 4 years. The Alliance recommends an increase of \$1.9 million, for total funding of \$5.5 million, in order to reinstate the residential transportation survey, last conducted in 1994, and to conduct the surveys every 3 years as required by the Energy Policy Act of 1992, instead of the current 4-year schedule.

ALLIANCE TO SAVE ENERGY ENERGY AND WATER APPROPRIATIONS FISCAL YEAR 2007 PRIORITIES

	Fiscal Year 2006 Approp	Fiscal Year 2007 Request	Alliance Rec.	Increase Over 2006
Key existing deployment programs (in order of priority):				
Building Codes Training and Assistance	4.5	.....	9.0	+ 4.5
Industrial Assessment Centers and Best Practices (Industrial—Crosscutting):				
Industrial Assessment Centers	6.4	4.0	8.4	+ 2.0
Best Practices	7.9	8.8	10.9	+ 3.0
Federal Energy Management Program	17.0	14.9	20.0	+ 3.0
Equipment Standards and Analysis (Buildings)	10.2	11.9	12.7	+ 2.5
Energy Star	5.9	5.8	6.9	+ 1.0
New deployment programs authorized in EPAct 2005 (in order of priority):				
Public Information Initiative (Program Support) .....	.....	.....	10.0	+ 10.0
Energy Efficiency Pilot Program (Electricity) .....	.....	.....	5.0	+ 5.0
Additional priorities:				
Building Technologies R&D (Buildings)	83.4	77.3	(¹)	.....
EIA Energy Consumption Surveys	3.6	3.6	5.5	+ 1.9

From testimony of Kateri Callahan, President, Alliance to Save Energy. All figures in millions of dollars. Also oppose cuts to Industrial Technologies R&D, Distributed Energy R&D, and Weatherization Assistance Program.

¹ Increase.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Mr. Chairman and members of the subcommittee, I am Peter Smith of New York and Chair of the National Association of State Energy Officials (NASEO). NASEO is submitting this testimony in support of funding for a variety of U.S. Department of Energy programs. We are in the midst of an energy emergency and the programs described below help the American people respond. Specifically, we are testifying in support of no less than \$74 million for the State Energy Program (SEP). Forty members of the Senate have written to this subcommittee supporting \$74 million in SEP funding for fiscal year 2007. The 20 percent cut in SEP in the fiscal year 2006 bill is devastating. SEP is the most successful program operated by DOE in this area. The administration's proposed increase to \$50 million is an important first step. SEP is focused on direct energy project development, where most of the resources are expended. We also support \$275 million for the Weatherization Assistance Pro-

gram (WAP). In addition, dramatic successes have been achieved through the State Energy Programs Special Projects (SEP Special Projects), which should receive at least funding of \$15.1 million, equal to the fiscal year 2006 level. The administration has proposed no funds for this program in fiscal year 2007. SEP Special Projects has set a standard for State-Federal cooperation and matching funds to achieve critical Federal and State energy goals. These programs are successful and have a strong record of delivering savings to low-income Americans, homeowners, businesses, and industry. We also support increases of \$1.6 million above the President's budget request for the Energy Information Administration (EIA) of \$89.8 million for EIA's State Heating Oil and Propane Program, and to preserve EIA Forms 182, 856 and 767. EIA funding is a critical piece of energy emergency preparedness and response. NASEO continues to support funding for a variety of critical deployment programs, including Building Codes Training and Assistance (\$5.6 million), Rebuild America (\$3.8 million), Energy Star (\$5.9 million) and Clean Cities (\$7.9 million). NASEO supports funding for the Office of Electricity Delivery and Energy Reliability at least at the fiscal year 2006 request of \$161.9 million, with specific funding for the Division of Infrastructure Security and Energy Restoration of \$18 million, which funds critical energy assurance activities. We strongly support the R&D function, Operations and Analysis and Distributed Energy activities within this office. The industries program should be funded at a \$74.8 million level, equal to the fiscal year 2005 levels, to promote efficiency efforts and to maintain U.S. manufacturing jobs, especially in light of the loss of millions of these jobs in recent years. Proposed cuts in these programs are counter-productive and are detrimental to a balanced national energy policy.

Over the past 4 years, both oil and natural gas prices have been rising in response to international events, increased international and domestic use and the result of last year's hurricanes, etc. The \$3.00/gallon gasoline prices will be with us for some time. We also expect \$70 oil to continue for an extended period of time, with an expanded crisis situation as summer approaches. The State energy offices are in the forefront of energy emergency response, and this will be a challenge a year after 20 percent cut in SEP funding. In addition, we now have quantifiable evidence of the success of the SEP program which demonstrates the unparalleled savings and return on investment to the Federal taxpayer of SEP. Every State gets an SEP grant and all States and territories support the program.CO₂

In January 2003, Oak Ridge National Laboratory (ORNL) completed a study and concluded, "The impressive savings and emissions reductions numbers, ratios of savings to funding, and payback periods . . . indicate that the State Energy Program is operating effectively and is having a substantial positive impact on the Nation's energy situation." ORNL has now updated that study and found that \$1 in SEP funding yields: (1) \$7.22 in annual energy cost savings; (2) \$10.71 in leveraged funding from the States and private sector in 18 types of project areas; (3) annual energy savings of 47,593,409 million source BTUs; and (4) annual cost savings of \$333,623,619. The annual cost-effective emissions reductions associated with the energy savings are equally significant: (1) Carbon—826,049 metric tons; (2) VOCs—135.8 metric tons; (3) NO_x—6,211 metric tons; (4) fine particulate matter (PM₁₀)—160 metric tons; (5) SO₂—8,491 metric tons; and (6) CO—1,000 metric tons.

State Energy Program Special Projects and Other Deployment Programs.—SEP Special Projects provided matching grants to States to conduct innovative project development. It has been operated for the past 10 years and has produced enormous results in every State in the United States. We support funding of at least the fiscal year 2005 funding level of \$15.1 million. The administration has proposed no direct funding in fiscal year 2007 for SEP Special Projects. SEP Special Projects grants are awarded competitively and thus complement the SEP formula grant, with almost all the States submitting winning proposals in 2005. These projects have provided successes in virtually every congressional district. The other deployment programs, including Rebuild America, Building Codes Training and Assistance (which the administration proposed to zero out), Clean Cities and Energy Star should receive funding of \$23.2 million. The administration proposed eliminating the Gateway Deployment Program by name, and shifted resources to other activities.

Industrial Energy Program.—A funding increase to a level of \$74.8 million for the Industrial Technologies Program (ITP) is warranted. This is a public-private partnership in which industry and the States work with the Department of Energy to jointly fund cutting edge research in the energy area. The results have been reduced energy consumption, reduced environmental impacts and increased competitive advantage of manufacturers (which is more than one-third of U.S. energy use). The States play a major role working with industry and DOE in the program to ensure economic development in our States and to try to ensure that domestic jobs are preserved.

EIA.—Additional funding is required to preserve EIA Forms 182, 856 and 767. The funding is only \$1 million per year. The Domestic Crude Oil Report (182) and Foreign Crude Oil Report (856) are not reliably available elsewhere, and tracks our importation and distribution of oil. As we are facing increased international tensions, there could never be a worse time to eliminate these forms. The 767 form tracks central station generation emissions, critical to State regulatory programs. The State Heating Oil, Natural Gas and Propane Program requires \$600,000 for adequate sampling.

Examples of Successful State Energy Program Activities.—The States have implemented thousands of projects. Here are a few representative examples.

California.—The California Energy Commission has operated energy programs in virtually every sector of the economy. The State has upgraded residential and non-residential building codes, developed a school energy efficiency financing program, industrial partnerships in the food and waste industry, instituted a new replacement program for school buses utilizing the newest natural gas, advanced diesel and hybrid technologies. The buildings program has reduced consumption by enormous amounts over the past few years, through alternative financing programs and outreach.

Hawaii.—The State is considering comprehensive energy legislation at the present time. A comprehensive program of energy efficiency for commercial and residential buildings has saved \$9.3 million annually. The State recently moved forward with energy code revisions projected to save tens of millions of dollars. The Hawaii “Green Business Program” saves \$175 in water, energy and waste minimization for every \$1 in SEP funds invested.

Idaho.—In Idaho the State has rated homes utilizing the Energy Star tools and signed-up 77 new builders to participate in the program. An aggressive energy efficiency financing program has produced 2,428 loans, totaling \$15.8 million for significant energy savings. The agricultural energy program has focused on reducing irrigation costs and usage to improve agricultural productivity and costs.

Kentucky.—The programs supported by SEP have assisted in construction of high energy performance K–12 schools, developed \$45 million in energy savings performance contracts, and funded energy efficiency and renewable energy projects at universities and local governments.

Missouri.—The energy office in Missouri has been operating a low-interest energy efficiency loan program for school districts, colleges, universities and local governments. Thus far, public entities have saved more than \$72 million each year, with more than 400 projects. The State energy office has also worked with the Public Utility Commission and the utilities within the State to get \$20 million invested in residential and commercial energy efficiency programs. A new revolving loan for biodiesel has also been initiated.

Mississippi.—The State operates an energy investment loan program targeted to schools, hospitals and manufacturers. Mississippi has been very active in the Energy Star program and has been attempting to conduct post-Katrina reconstruction in an energy efficient manner.

Montana.—The State has issued over \$7.5 million in bonds to fund 60 energy efficiency projects in State buildings. The savings pay for themselves very quickly. The State has also upgraded building energy codes and instituted 44 projects impacting over 2 million square feet of building space, with non-Federal leverage of \$11.5 million.

Nevada.—The State has focused on energy code training and technical assistance to ensure that new housing construction is conducted in an energy efficient manner, as well as a large expansion in renewable energy programs.

New Mexico.—With new State legislation, the State energy office is supporting and expanding renewable energy usage, tax incentives for hybrid vehicles, school energy efficiency programs, technical assistance to the wind industry and expansion of geothermal resources. The State has arranged approximately 40 energy performance contracts with annual energy savings in the millions. There has also been an expansion in the use of ethanol and biofuels.

North Dakota.—The State energy office is supporting programs for ethanol and biodiesel promotion. The State has also funded energy efficiency programs for local builders, schools and for lower income households.

Texas.—The Texas Energy Office’s Loan Star program has long produced great success by reducing building energy consumption and taxpayers’ energy costs through efficient operation of public buildings. This saved taxpayers more than \$172 million through energy efficiency projects. Over the next 20 years, Texas estimates that the program will save taxpayers \$500 million. In another example, the State promoted the use of “sleep” software for computers, which is now used on 105,000 school computers, saving 33 million kWh and reducing energy costs by \$2 million

annually. The State has initiated the Texas Emissions Reduction Plan/Texas Energy Partnership in 41 urban counties to reduce emissions through cost-effective energy efficiency projects.

Utah.—SEP funds have been utilized to support solar and wind programs, as well as implementation of a stronger energy building code. The State has also supported local government energy efficiency.

Washington.—The State energy agency works with the Northwest Energy Efficiency Alliance to target \$20 million in funding for energy efficiency and renewable energy projects. The State is also closely involved in energy emergency preparedness and response. The Resource Efficiency Managers Program, supported by SEP, conducts on-site training for energy savings. For example, working with Ft. Lewis and Puget Sound naval facilities, the program has saved over \$2.5 million.

West Virginia.—The energy office has focused on industrial energy savings, including identified savings of \$2.4 million in 2005 alone. Energy projects in the industrial sector have totaled \$29 million during the past 9 years. The State has also supported dramatic expansion of renewable energy programs and is projecting \$3 million in school energy cost savings each year through energy efficiency programs.

PREPARED STATEMENT OF THE MID-WEST ELECTRIC CONSUMERS ASSOCIATION, INC.

The Mid-West Electric Consumers Association (“Mid-West”) represents hundreds of rural electric cooperatives, public power districts and municipally-owned utilities in the nine States of the Missouri River Basin, including: Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. This testimony supports fiscal year 2007 funding for the Western Area Power Administration (“WAPA”): (1) \$275 million for purchase power and wheeling; and (2) a total of \$193,482 million for operations, maintenance (\$45,734 million) and program direction (\$147,748 million), utilizing the “net-zero” approach. Mid-West opposes: (1) the administration’s proposal to increase electric rates of the Power Marketing Administrations (“PMAs”) by changing the interest rate on new Federal power investments; and (2) reallocating certain irrigation costs in the Pick-Sloan Missouri Basin Program.

PURCHASE POWER AND WHEELING

Mid-West supports the proposed budget for purchase power and wheeling. WAPA and other PMAs are responsible for marketing and delivering hydropower generated at Federal dams to eligible consumer-owned utilities. In light of soaring energy costs and record low reservoir levels, funding is required for purchase power and wheeling. The administration’s budget request of \$275 million for purchase power and wheeling is minimally adequate. These costs are paid for by Federal power customers. The persistent drought in the Missouri River Basin means that the 2006 generation estimated by the Corps of Engineers will be 61 percent of normal. Present projections could be further reduced if the navigation season is shortened.

The language in the fiscal year 2002–2006 appropriations bills should be retained so that the PMAs could continue to utilize customer-generated receipts to help fund their purchase power and wheeling costs. Otherwise, small utilities, such as rural electric cooperatives, municipally-owned utilities, Native American tribes, irrigation and public power districts, would have to develop their own transmission and power firming agreements which would increase costs. The language regarding purchase power and wheeling included in the fiscal year 2007 budget request should be inserted in the fiscal year 2007 Energy and Water Appropriations bill. Mid-West supports this language.

“NET ZERO” APPROPRIATIONS FOR FEDERAL PMAS

The administration’s fiscal year 2006 budget proposed a “net-zero” funding approach for the annual cost of the PMAs’ operations, maintenance and program direction. Unfortunately, this provision was not included in the fiscal year 2007 budget request. The “net-zero” proposal recognizes that certain Federal outlays for a given fiscal year will be returned to the Treasury in that same fiscal year. Mid-West supports this proposal, which is already used to fund other Federal energy agencies. The PMAs’ budgets cover all the costs of their operations. A budget scoring adjustment is required to make this “net-zero” approach truly effective. Receipts collected by WAPA to repay program direction and operation and maintenance expenditures should be reclassified from “mandatory” to “discretionary.”

INTEREST RATE CHANGE

Historically, the interest charged on Federal power investment has been the U.S. Treasury's long term yield rate. Each year, the Treasury provides to the PMAs the interest rate to be charged for investments made in that year. Those investment costs plus interest are repaid to the Treasury through power rates charged to Federal power customers.

Now, the administration has stated that it intends to change that practice and charge the "agency rate," which is the rate charged to governmental corporations. The difference between this rate and Treasury's long term yield rate is described as "small," averaging about 0.4 percent, which would garner about \$2–\$3 million per year from Federal projects where the interest rate is not set by law.

The PMAs—WAPA, Southeastern, and Southwestern are not government corporations. They do not have borrowing authority or other authorities available to government corporations. The PMAs are Federal agencies within the Department of Energy and are funded annually by congressional appropriations.

The current practice of using Treasury's long-term yield rate has worked well for decades. It is wrong to assign an interest rate formula for a government corporation to Federal agencies that are not government corporations.

REALLOCATION OF IRRIGATION COSTS

The proposed reallocation and acceleration of Pick-Sloan Missouri Basin investment is apparently a rehash of a similar proposal in last year's budget request. It is hard to tell exactly what is proposed since there is no legislative language or even a detailed explanation of the proposal.

The short "explanations" that have been offered are inconsistent. One section of the budget calls for repayment of vaguely defined construction costs—"Power customers will be responsible for repayment of all construction from which they benefit." (p. 188 Department of Interior: Mandatory Proposal Recover Pick-Sloan Project Costs). However, Bureau of Reclamation Highlights (BH-36) calls for "repayment of construction and operations costs"

The budget request erroneously states that Pick-Sloan power customers have not heretofore been responsible for repaying these costs. Pick-Sloan power customers are responsible for repaying all the costs of the power investment, joint costs allocated to the power function, and a huge portion of investment related to irrigation. These repayment obligations have been organized under the "ultimate development" concept.

Most simply put, the administration's budget request would destroy the ultimate development concept that allocates costs among the various project purposes and determines repayment practices.

CORPS OF ENGINEERS "CONSTRUCTION GENERAL" ACCOUNT

As part of its Operations and Maintenance budget, the Corps of Engineers is requesting \$85 million for recovery of the pallid sturgeon on the Missouri River. In fiscal year 2006 the Corps is spending roughly \$54 million from its Construction General account. Mid-West sees no reason to change the budget classification of these dollars in fiscal year 2007. Monies related to pallid sturgeon recovery should be transferred to the Corps Construction General account, where they more properly belong, and where they have been accounted for in past years.

CONCLUSION

Thank you for the opportunity to provide written testimony to the subcommittee on these important issues. We stand ready to respond to any questions.

PREPARED STATEMENT OF THE HOSPITAL FOR SPECIAL SURGERY

Mr. Chairman, and members of the subcommittee, thank you for the opportunity to submit testimony to the hearing record regarding Hospital for Special Surgery (HSS) in New York, New York. Since its founding over 140 years ago, HSS has been the hospital of choice for countless individuals of all ages—from infants to older adults—suffering from musculoskeletal conditions. Today, HSS is considered the premier specialty hospital for orthopedics and rheumatology in the United States and abroad.

As you know, funds to support the establishment of the National Center for Musculoskeletal Research at Hospital for Special Surgery were included in Energy and Water Appropriations in fiscal year 2001 and fiscal year 2005. First, I would like

to take this opportunity to thank the subcommittee for its support and to report on the excellent progress that has been made in achieving this goal.

With a combination of institutional, private, and government support, HSS has transformed its research enterprise over the past 6 years, from the physical plant to the depth and focus of its scientific expertise. HSS has conducted the largest recruitment drive in its history. Expanded, state-of-the-art laboratories have increased the quality and quantity of investigations. Today, 70 percent of HSS' basic research activity is federally funded, meeting national benchmarks. Our critical mass of expertise is composed of 34 bench scientists and 129 full-time laboratory fellows, technicians, and support. Of course, the most important measure of success is HSS's capacity to improve quality of life through treatments derived from a greater understanding of disease. This has been fortified by the scientific talent and new resources made possible by the Hospital's generous supporters. Today, the National Center for Musculoskeletal Research at HSS is an internationally recognized leader whose pioneering scientists are making significant contributions to understanding diseases like arthritis, osteoporosis, and lupus, and advancing progress toward the development of better treatments and cures.

The Hospital's groundbreaking basic, translational, and clinical research efforts are unique in that they are informed by its very sizeable patient base, which is the largest of any musculoskeletal hospital in the world. HSS's surgical techniques, rehabilitation practices, orthopedic imaging, anesthesiology and pain management, and non-surgical interventions are the "best practices" in the field. To continue to advance the state-of-the-art, while meeting the needs of increasing numbers of patients, HSS is now working to create an entirely new platform of patient care for the 21st century. The centerpiece of this initiative is the expansion and modernization of its clinical facilities to provide the highest level of care to the increasing number of patients seeking the expertise of the Hospital's extraordinary medical staff. HSS has requested a fiscal year 2007 appropriation of \$4 million to advance this important project.

The Hospital last expanded in 1996 when facilities meant for polio patients and lengthy hospitalizations were redesigned and modernized. In the succeeding years, pioneering advances in musculoskeletal medicine have taken place, many of them using biosynthetic materials, molecular diagnostics, innovative surgical tools and techniques, and computer guidance and modeling. Since 1996, HSS has added 65 medical staff and numerous specialized centers dedicated to research and clinical care in orthopedics, rheumatology, complementary medicine, sports medicine, non-surgical interventions, imaging, and pain prevention.

New medical staff have the opportunity to learn from surgeons and physicians who have practiced at HSS for decades, embracing a great breadth and depth of experience, historical knowledge of the field, and insight into patients' needs, expectations, and potential for recovery. Building on experience, we have increased our efficiencies and ability to help increasing numbers of patients from all over the world. For example, the average length of stay for joint replacement has been reduced from 6 days (1996) to less than 4.5 days. For patients who qualify for minimally invasive surgery, many can leave the hospital within 2-3 days. In the future, we feel certain some joint replacement surgery will be carried out on an ambulatory basis.

The major demographic and sociological trends observed worldwide are fueling a demand for care at HSS that is unprecedented. There has been an extraordinary increase in the over-60 population and their need for musculoskeletal medicine; and there is a more active, younger population desiring to remain mobile and play sports as they grow older. From 1996 to 2005, Special Surgery's annual surgical volume rose from 10,700 to 17,500 and its annual outpatient visits rose from 147,000 to 230,000, a total increase of approximately 60 percent. Special Surgery is also a magnet referral center for complex surgeries, with growing numbers of patients requiring extensive, high-level care.

Meeting demand is only part of the equation. Bringing improved treatments and interventions to patients is of utmost importance. HSS continues to be a leader in advancing clinical treatments that enable patients to recuperate more quickly and regain mobility. HSS-led innovations on the horizon include:

- Minimally invasive knee, hip, and shoulder implants for younger patients.
- "Baby boomers" are our fastest growing patient segment.
- Spinal disc replacement surgery for degenerative disc disease, and spinal stabilization without fusion.
- Effective treatments for early arthritic patients when there is a "window of opportunity" to slow and perhaps halt the progression of disease.
- Biosynthetic materials that mimic everyday movements to repair sports injuries to ligaments, tendons, meniscus, and cartilage.

- Biological solutions with minimal side effects to treat and prevent the progress of a wide range of inflammatory conditions.
- New diagnostics to predict the efficacy of medical treatments.
- Advanced imaging techniques that can diagnose disease at the pre-clinical stage, enabling earlier and more effective treatment.
- New medications to intervene before nerve injury and remold pain pathways, minimizing post-operative pain.
- Computer-assisted surgical procedures.

An expanded clinical facility will enable the countless patients who seek our help to have the benefit of these medical innovations.

Our new clinical facilities and extraordinary volume of patients will also provide an unparalleled opportunity to create a robust clinical research program. The potential for new knowledge in joint replacement is significant, since HSS performs the greatest number of hip and knee replacements in the world, more than 4,000 annually. The clinical research program will be built on a strong basic research foundation, which was strengthened over the past several years with the vital support of the Energy and Water Subcommittee.

In our “new hospital” every patient would have an opportunity to partner with us as a research patient in the effort to gain a deeper understanding of bone and joint disease to perfect treatment for future generations. With advanced technology, patients will help create their own research records, containing uniform, prospective data on the nuances of their treatment and progress. Each specialty service will have its own clinical research coordinator, and patients will have “real time” access to information about clinical trials. Clinical research analysis, coupled with our knowledge of disease at the basic science level—particularly arthritis and inflammatory disease—will provide a powerful resource for advancing musculoskeletal health and restoring patients’ mobility. We are currently recruiting new leadership for this program and developing the required infrastructure to successfully launch this initiative in our expanded facilities.

The Hospital’s new facilities will be completed by 2009 and encompass 201,000 square feet of new construction and 75,000 square feet of renovated existing space. On-site patient services will be significantly expanded and redesigned for greater efficiency and comfort. Highlights include a modernized, expanded ambulatory surgery center; enhanced rehabilitation facilities; new imaging, pain management, and minor procedures facilities; and an enhanced sports medicine rehabilitation center. In addition, the Hospital is refurbishing the lobby of the Main Building to better serve patients and their families. HSS took a unique approach to the design of this project, forming a collaborative team of physicians, nurses, architects, and planners to develop an optimum healing environment that flows efficiently for both patients and medical staff.

Mr. Chairman, the objectives of Hospital for Special Surgery’s Clinical Facilities Expansion and Modernization Project are consistent with those historically funded by the Department of Energy in the Energy & Water Appropriations Bill. We hope that the subcommittee will provide \$4 million in fiscal year 2007 toward this capital expansion, which will benefit countless patients as they grow older and seek help for a range of musculoskeletal conditions. The chances are, no matter where patients live, they will be helped by a medical advance pioneered at HSS or by an HSS-trained physician. To keep this promise alive, we must be able to expand clinically and lead the way, as we have done since opening our doors as America’s oldest existing orthopedic hospital.

PREPARED STATEMENT OF THE GE ENERGY ADVANCED TECHNOLOGY OPERATION

The following testimony is submitted on behalf of GE Energy (GE) for the consideration of the committee during its deliberations regarding the fiscal year 2007 budget requests for the Department of Energy (DOE). GE urges the committee to provide funding to initiate the Western IGCC Demonstration Program, as authorized in the Energy Policy Act of 2005. Additional resources also are needed for the Advanced Turbines program, DOE’s major research effort focusing on gas turbines for electricity production which also addresses key needs for hydrogen turbines. GE further recommends \$10 million in additional funding for the SECA program to support further advances in fuel cell technologies for power production. Investments in these and the other important programs discussed below will help to meet the challenges of assuring a diverse portfolio of domestic power generation resources for the future.

Western IGCC Demonstration Program.—As the committee is aware, there has been a substantial resurgence in interest in coal-fired electricity generation. Integrated gasification combined cycle (IGCC) is a leading technology for the next generation of coal plants. IGCC reduces emissions of sulfur dioxide by 75 percent, nitrogen oxides by 33 percent, and particulate matter by approximately 50 percent compared to a state-of-the-art pulverized coal plant. IGCC also is more cost effective at removing mercury and carbon dioxide. Development of several large-scale commercial IGCC plants is underway. These “first-of” plants are a critical step towards reaching IGCC’s entitlement in performance and cost.

If the full national environmental and energy benefits of IGCC are to be achieved, the ability of IGCC technology to efficiently use low rank coals, such as those from the Powder River Basin that are increasing in importance as a low cost, domestic fuel source, must be addressed. Engineering design for the first-of-a-kind plant capable of commercial operation on low rank coals is a key requirement. Unlike natural gas plants, the first-of-a-kind advanced coal plant for low rank coal will require significant preliminary engineering and technology integration. Section 413 of the Energy Policy Act of 2005 authorized the Western Integrated Coal Gasification Demonstration Program. This cost-shared program would provide the framework for the Federal Government and industry to work together to expand the envelope of efficient, low emissions IGCC technology to economically use these coals. This important initiative is deserving of the committee’s consideration.

IGCC.—GE recommends that the budget for DOE’s Advanced IGCC program be increased by \$12 million in fiscal year 2007 to be used to offset the first-of-a-kind project engineering development costs that are required to deliver commercial IGCC plants capable of utilizing low rank coals. This would relieve launch customers and early adopters of being differentially burdened with advancing this technology, and will ultimately lead to benefits throughout the industry as this up-front development engineering is captured to provide designs for like-plants.

Clean Coal Power Initiative.—The budget request includes only minimal funding for the Clean Coal Power Initiative (CCPI) in fiscal year 2007, which will presumably delay future solicitations for the program. While GE understands the administration’s desire to increase the effectiveness of the program, the need for a commercial demonstration program for advanced coal power technologies is undiminished. Federal investment in clean coal technology has produced a profound improvement in coal-based generation technology. The pre-commercial demonstrations of IGCC technology at TECO Polk and Wabash through the predecessor Clean Coal Technology Program proved the economic viability of IGCC and served as a catalyst for the industry to develop IGCC into commercial power generation offerings.

While the development of several large-scale commercial IGCC plants is underway, preliminary development at the pilot stage already is ongoing for the next generation of IGCC technology. GE sees a continuing need for the CCPI to serve as the vehicle for the scale-up, plant integration, and initial deployment of advanced IGCC technologies. The CCPI also would serve as means to support the deployment at commercially-relevant scale of technologies that the FutureGen initiative is likely to develop. Any failure to continue funding for the CCPI program at prior year levels should not be seen as a weakening of the commitment to this program.

Turbines.—GE recommends that funding be increased by \$22 million to a total of \$35 million for the Advanced Turbines program, within the Fossil Energy/Coal/Fuels and Power Systems budget line. This program represents the Department’s primary research effort focusing on gas turbines for coal-based electricity production, such as FutureGen, and is designed to enable the low-cost implementation of major policy initiatives in the areas of climate change, reduced powerplant emissions and future generation technologies. Continued turbine research and development is needed to address DOE’s efficiency and emissions goals for power generation from coal, the Nation’s most abundant domestic energy resource.

Gas turbine R&D is focused on advanced combustion and high temperature turbine technology for syngas/hydrogen fuels that will result from IGCC and FutureGen type power plants. The program addresses those gas turbine elements where the technology required for the use of syngas/hydrogen fuels differs from the requirements for natural gas fueled gas turbines. Work in this area is proceeding under DOE-awarded cost-share contracts resulting from a March 2005 solicitation entitled “Enabling Technologies for High-Hydrogen Fuels.” Unless the fiscal year 2007 budget for the Advanced Turbines program is increased, funding will be inadequate for this promising work, and the progress and benefits of this research will be delayed accordingly.

GE has experience with gas turbines operating on fuel blends containing hydrogen, and has performed laboratory demonstration tests on high hydrogen content fuel. This experience highlighted the need for development of advanced combustion technology in order to drive down NO_x emissions and enable advanced hydrogen generation processes. In addition, current strategies for effective integration of all major subsystems need to be reviewed and redefined for use with hydrogen fuel.

Continued funding of DOE's program is essential for FutureGen to meet its goal of substantial improvement in the cost of carbon capture. FutureGen is intended to serve as a demonstration for the technical feasibility of achieving nearly carbon-free power with IGCC. FutureGen is being structured to serve as a test bed for advanced technology that is needed to reduce the performance penalty and improve the economics of carbon capture. If it is to meet its goals, the FutureGen program will need to draw on advancements resulting from the hydrogen turbine program.

GE recommends the committee's attention to the testimony submitted by the Gas Turbine Association relative to the allocation of additional funding above the budget submission within the Advanced Turbines program budget. In particular, GE encourages the committee to assure adequate funding for the University Turbine Systems Research Program.

Solid-Oxide Fuel Cell (SOFC) Development, Solid State Energy Conversion Alliance (SECA) Program

SOFC utilize an electrochemical process to cleanly convert a range of fuels into electricity. A SOFC/gas turbine hybrid system utilizes the fuel cell as the primary power generation source. The residual fuel and energy from the fuel cell is combusted in a gas turbine to create additional power. By combining these two technologies, SOFC/gas turbine hybrid systems have the potential to revolutionize fossil-based power generation with new standards for efficiency and reduced emissions.

DOE's SECA program supports the development of high temperature SOFC fuel cell technology for stationary power generation. This technology offers the potential for a step change improvement in efficiency and reduction in emissions for power generation from coal. Successful development of large scale (e.g., 500 MW) SOFC-turbine hybrid based power plants would provide highly efficient, cost-effective, near-zero atmospheric emissions in coal-based central power generation applications capable of reaching the DOE target for efficiencies up to 60 percent. The systems also would be compatible with carbon-free concepts as planned for FutureGen.

GE successfully completed SECA Phase I SOFC system testing in 2005. This success contributed to the DOE SECA program's achievement of its key 2005 milestones, which is an important indicator that the program is making good technical progress. Key technology challenges remain and are being addressed as the DOE program proceeds. Continued joint DOE-industry investment in SOFC-hybrid technology will position U.S. industry as leaders in the rapidly growing worldwide "ultra-clean" energy market, in which other governments, including the Japanese and European governments, are investing heavily.

An increase of \$10 million above the administration's budget request, for total funding of \$73 million, is needed in fiscal year 2007 to fully fund the SECA program. GE recommends that DOE be given the flexibility to apply funding as best needed to meet DOE's and the program's goals.

RENEWABLE ENERGY PROGRAMS

Wind Energy.—Sustainable generation of clean energy from wind is imperative to realizing the objectives of the President's Advanced Energy Initiative, as well as the goals of the Energy Policy Act of 2005. The milestones established by the Department of Energy to reach 100 GW of wind energy capacity by 2020 demand a coordinated effort to develop favorable long term policy, energy infrastructure, and product technology advancement to continue to drive the cost of electricity down for both on-shore and off-shore applications. Reaching the DOE goals would result in 10 percent of U.S. power generation being produced from renewable wind power. The emissions reduction benefit would be the equivalent of removing 20 million automobiles from the highways.

DOE's internal Wind R&D programs and cost-share programs with industry are instrumental in accelerating technology advancement and cost of electricity reduction. Unfortunately, constraints on fiscal year 2006 funding caused DOE to slow some programs and cancel others. In support of the DOE goals, for fiscal year 2007 these programs need to be accelerated, and stopped programs restarted. Consistent with the recommendations of the American Wind Energy Association, GE recommends that DOE's fiscal year 2007 Wind program funding be increased by \$30 million to a total of \$74 million.

OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY

Microgrids.—GE Global Research is collaborating with the Office of Electricity Delivery and Energy Reliability (OE) in a \$4 million program initiated in 2005 to design and demonstrate an Advanced Energy Management System for Microgrids. The DOE's vision of the future electric power infrastructure, GRID 2030, identifies microgrids as one of three major technical cornerstones for a more reliable and congestion-free energy delivery system, and describes distributed intelligence and clean power as key technologies needing development. GE supports an additional \$10 million in funding to support the realization of the GRID 2030 vision by bringing microgrid technologies to market and also to better leverage into this effort the integration of the Department's Distributed Energy Program into the OE organization.

Cross Cutting Technologies—Ceramic Matrix Composites.—Work on ceramic matrix composites (CMC) has been an important research component of the budget for Distributed Energy Programs. As DOE's budget request acknowledges, advanced materials research, such as research on composites, is designed to enhance the efficiency and environmental performance of gas turbines. CMCs offer greater than 300 to 500° F capability when compared to metallic materials currently used in gas turbine products. A 50° F improvement in materials capability is normally considered one generation of materials development. The increased temperature capability of CMCs provides potential benefits in power output, efficiency, emissions, and part life, depending on the component and how it is utilized in power generation equipment. Other potential energy-related opportunities for CMCs include aircraft engines for commercial and military applications and aerospace applications.

CMCs are a high-risk, high-payoff technology with great promise for energy savings. GE Energy is committed to cost-sharing with DOE in a multi-year effort to further the development of this critical technology. Funding of \$2 million is necessary for fiscal year 2007 for CMC crosscutting technology material development, through the Distributed Energy Technology Research program.

PREPARED STATEMENT OF THE ELECTRIC DRIVE TRANSPORTATION ASSOCIATION

Last year when Congress was assembling the DOE budget, the cost of a barrel of oil was just surpassing \$50; today the price hovers above \$70 and the administration and Congress have declared greater oil independence a priority. The committee has the opportunity, in the fiscal year 2007 budget, to make substantial inroads in addressing oil dependence through aggressive support for electric drive technology programs at the Department of Energy.

The Electric Drive Transportation Association (EDTA) is a multi-industry trade association whose mission is promotion of electric drive technology in all its applications. Our members include a diverse representation of vehicle and equipment manufacturers, energy providers, component suppliers and end users who recognize the potential for reduces petroleum consumption and decreased emissions of greenhouse gases and pollutants that electric drive offers. A list of our membership is provided with this statement.

Multiple technologies, including hybrids, battery electric and fuel cells, as well as diverse fueling options, will be necessary to meet the transportation needs of the Nation efficiently. Advances in these technologies are supported in a number of existing programs in the DOE Office of Energy Efficiency and Renewable Energy (EERE), including the Hydrogen and Fuel Cells Technologies Programs and the Vehicle Technologies Programs. Important new programs, authorized in the Energy Policy Act of 2005 (EPAct 05), will enable even greater progress in reducing the transportation sector's reliance on petroleum.

Unfortunately, the administration's request does not fully invest in the programs that will move the Nation toward its petroleum goals. Specifically, the administration's fiscal year 2007 request for FreedomCAR and Vehicle Technologies is \$166 million—a more than 8 percent decrease from the fiscal year 2006 appropriation and flat funded with the fiscal year 2006 request.

Regarding the Fuel Cell and Hydrogen Technology Programs, the administration request ignores the thoroughly vetted directives of EPAct 2005. The \$195 million requested for the Hydrogen Technology Program is a welcome increase over the current appropriation but does not address the funding and programmatic direction of EPAct 2005. We are concerned that failure to adequately fund the program may undermine the ability to meet program 2015 and 2020 milestones and postpone achievement of commercial options for petroleum free transportation.

The request also omits funding for EPAct 2005 Loan Guarantees for Innovative Technologies, which will expand the domestic infrastructure for efficient technologies while minimizing the government's financial exposure. We urge the com-

mittee to provide adequate resources to ensure that this program can get underway as expeditiously as possible.

We support the administration's request for \$14 million for research and development of plug-in hybrid technologies. It is an investment that will assist in proving out this new electric drive option. It will also provide support for battery and other technology advances that will advance all electric drive options: hybrid, battery electric and fuel cells.

EDTA also encourages appropriate funding for the fleet-based programs that support technology developments. In particular, the EPAct 2005 includes an important modification to the EPAct 92 fleet requirements, directing the creation of an alternative compliance waiver option for State and alternative energy provider fleets that will permit the use of hybrid and other technologies to comply with fleet fuel reduction requirements.

Although the request includes \$11 million for Technology Introduction subprogram, which is charged with implementing this option, none are specifically directed to implementation of the waiver option. With multiple, higher profile program responsibilities, we are concerned that insufficient resources will be allocated to waiver implementation.

Another important fleet-oriented petroleum reduction program, Clean Cities works with voluntary coalitions to build clean and efficient local fleets, including schools, airports, and municipal bus fleets. The request for this program would cut already limited funding by a third, to \$4.4 million.

As the compounding consequences of oil dependence are being made acutely clear, we urge the committee to take full advantage of the solutions that are possible through the EERE vehicle programs. We respectfully request that you fund these programs at the levels commensurate with their benefits to the Nation: increased U.S. security, a cleaner environment and a stronger economy.

Thank you for your consideration.

EDTA Members: A123 Systems; Advanced Transportation Technology (ATTI); Air Products & Chemicals; American Honda Motor Company; American Public Power (APPA); Austin Energy; Azure Dynamics Corporation; Ballard Power Systems; CEREVEH; Chamber of the Americas; CITELEC; City of New York; Curtis Instruments; DaimlerChrysler Corporation; Edison Electric Institute; eGO Vehicles; Electric Power Research Institute (EPRI); Electricite de France; ElectroVaya; Energy Conversion Devices, Inc./Ovonic; Enova Systems; Fallbrook Technologies; General Motors Corporation; Georgetown University; Global Electric MotorsCars (GEM); Greater Oslo Public Transport; Hyundai-Kia America Tech Center; Independent Energy Efficiency (IEEP); Long Island Power Authority; Massachusetts Division of Energy Resources; Maxwell Technologies; Methanex, Inc.; Michelin North America; Mid-Del Lewis Eubanks (AVTS); National Alternative Fuels Training Consortium (NAFTC); National Golf Car Manufacturers Association; New York Power Authority; New York State Energy-NYSERDA; Nissan North America; Northeast Sustainable Energy Association; Opal-RT; Pacific Gas & Electric (PG&E); Raser Technologies; Sacramento Municipal Utility District (SMUD); Saft America, Inc.; San Diego State University; Southern California Edison; TM4, Inc.; Tokyo Electric Power Company (TEPCO); Toyota; Tri-Met; University of California, Davis/ITS; UQM Technologies, Inc.; U.S. Department of Energy; Volkswagen; Voltage Vehicles/ZAP.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

The American Society of Plant Biologists (ASPB) appreciates this opportunity to submit testimony on the fiscal year 2007 budget request for the Department of Energy Office of Science. We urge the committee to approve the President's proposal in the American Competitiveness Initiative, Advanced Energy Initiative and fiscal year 2007 budget request for an increase of 14 percent to \$4.1 billion for the DOE Office of Science. Included with the President's budget request is \$255 million for the Chemical Sciences, Geosciences and Energy Biosciences Division. A total of \$35.8 million within the division is requested by the President for the Energy Biosciences program. We urge you to support the President's request for Basic Energy Sciences, the Chemical Sciences, Geosciences and Energy Bioscience Division and the Energy Biosciences program within the division.

Basic energy research on plants and microbes supported by the Energy Biosciences program contributes to advances in renewable resources for fuel and other fossil resource substitutes, clean-up and restoration of contaminated environmental sites, and in discovering new knowledge leading to home-grown products and chemicals now derived from petroleum.

The Energy Biosciences program supports leading research on plants and microbes conducted primarily by university-based scientists throughout the country. Grants are awarded through a competitive process utilizing rigorous peer-review standards.

Energy Biosciences grantees include scientists who have received recognition from a number of distinguished science institutions and organizations, including national and international science societies, the National Academy of Sciences, and a Nobel Prize selection committee. Basic research on plants and microbes contributes to advances that help address the Nation's future demands for domestically-produced energy sources, such as energy crops.

We fully support the President in his State of the Union Address in which he called for the Nation to conduct energy research for bio-fuels to help break the Nation's addiction to foreign oil. The President explained in the State of the Union Address and in subsequent talks in Tennessee, Minnesota and Colorado soon after, that research on plant cellulose to produce ethanol, on switch grass, wood chips and other sources of bio-energy could help transition a significant portion of the Nation's transportation sector away from imported gasoline to domestically produced bio-fuels.

Research the committee supported within the Energy Biosciences program led to the landmark discovery of how to break down plant cellulose into ethanol. We applaud the committee for its support of basic research on plants and microbes within the Energy Biosciences program and within the Office of Biological and Environmental Research to help make possible the President's achievable proposal to make domestically produced bio-fuels directly cost competitive with gasoline.

As ASPB President, Michael Thomashow, University Distinguished Professor at Michigan State University, a member of the National Academy of Sciences, noted, with the development of "genomic sciences" and sophisticated new instrumentation, we can now probe the life of plants at levels that just a few years ago seemed, at best, to be wishful thinking. Indeed, given the distance that we have come since the plant sciences entered the modern "molecular genetic era," ushered in with the advent of plant transformation systems during the 1980's, the goal of understanding plant processes at a "systems" level would not appear to be just a trendy pipedream, but a real, attainable goal within the not-too-distant future, Thomashow noted.

How will we use these powerful new approaches and the insights that we gain about basic plant biology? The answer is that they will be used in many ways and have many applications ranging from the nutritional enhancement of food products to the production of bio-fuels and feedstocks for the chemical and pharmaceutical industries. One area that is particularly exciting is the development of renewable energy sources.

We are all well aware of the geopolitical challenges that are posed by our current dependence on non-renewable sources of energy. In addition, we are well aware of the negative impacts that using many of these energy sources can have on the environment, such as emissions of greenhouse gasses attendant with the use of petroleum-based transportation fuels. It would be wonderful if we could replace petroleum-based transportation fuels with more environmentally friendly "bio-fuels" produced from renewable "energy crops." For some within the oil and related industries, the doubt arises whether this is even within the realm of possibility. Could the United States, for instance, grow and harvest enough "biomass" on an annual basis to produce enough ethanol and bio-diesel to significantly decrease our dependence on petroleum-based transportation fuels without jeopardizing the production of food to feed the Nation and to meet export demands?

This general issue was addressed in a joint study by the U.S. Department of Energy and U.S. Department of Agriculture released in April 2005. The results were published in a report entitled "Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply" (http://www.eere.energy.gov/biomass/pdfs/final_billionton_vision_report2.pdf). In particular, the study committee asked whether the land resources of the United States would be capable of producing a sustainable supply of biomass sufficient to displace 30 percent or more of our current petroleum consumption, a goal that would require the production of approximately 1 billion dry tons of biomass feedstock per year. In short, the study committee concluded that the answer to this question is "yes"; that annually, U.S. forest and agricultural lands have the potential to produce, respectively, over 360 and 990 million dry tons of biomass feedstock. Reaching these levels of biomass production, however, will require a number of developments including changes in production practices and significant increases in crop yields. For example, crop land would likely be managed with no-till methods and a 50 percent increase in the yields of corn, wheat and other small grain crops would be required.

Using biomass feedstocks to provide significant levels of renewable energy is an exciting, inspiring vision for the future of America and the greater world community. The goal set by John F. Kennedy of putting a human being on the moon by the end of the 1960's served as a unifying theme that helped nucleate efforts that led to spectacular advances in science and technology and, equally importantly, helped attract young people to these areas of study. Setting national and international goals for producing renewable, environmentally friendly energy sources also has the potential to stimulate important advances in science and technology and to attract young people to these areas of study. In regard specifically to plant scientists, such goals also provide a framework for integrating much of plant biology research. Understanding plant growth and development at a systems level feeds into increasing biomass, as does understanding basic mechanisms of abiotic and biotic stress tolerance. Understanding how cell walls are synthesized and their composition determined is not only fundamental to our knowledge of basic plant biology, but also is a central issue in biomass production and conversion. The same can be said of understanding how plants synthesize and regulate the production of lipids and oils as well as many other plant constituents and processes.

Plant scientists have a fundamental role to play in developing clean, renewable energy sources thanks in large part to the history of strong support for the Energy Biosciences program of this committee.

The rigorous standards consistently followed by the Energy Biosciences program in reviewing grant proposals and making awards have contributed to the outstanding success of the program. For example, research sponsored by the Biosciences program led to new findings on the capture of energy from photosynthesis. This research led to the presentation to Biosciences-program-grantee Dr. Paul Boyer of the shared award of the 1997 Nobel Prize in Chemistry (biochemistry). Photosynthesis is an essential energy conversion process upon which all life on earth depends. Photosynthesis in plants is nature's way of utilizing sunlight to produce chemical energy and to bring carbon dioxide into biological organisms. Increased knowledge in this area could lead to a better understanding of how to manage carbon dioxide in the atmosphere. Further research in this area could also contribute to development of alternative energy sources.

Plants are a major source of renewable and alternative fuels in the United States. Greater knowledge of the basic biology of plants will lead to further economies in domestic production of renewable fuels.

ASPB is a non-profit society of nearly 6,000 scientists based primarily at universities. ASPB publishes the two most-frequently cited plant science journals in the world, *Plant Physiology* and *The Plant Cell*. We deeply appreciate the continued strong support of the committee for innovative research on plants and microbes sponsored by the Office of Science, Office of Basic Energy Sciences through its Energy Biosciences program and Office of Biological and Environmental Research. Please let us know if we could provide any additional information.

Disclosure Statement on Federal Grant Support.—The American Society of Plant Biologists (ASPB) received Federal grants from USDA-CSREES in the amount of \$7,000 in each of fiscal years 2005 and 2006 to help coordinate the USDA-CSREES Plant and Pest Biology Stakeholders' Workshop and print the subsequent workshop report. Many associations representing growers of commodity crops; science societies representing the research community; and officials administering Federal research programs participated.

PREPARED STATEMENT OF THE AMERICAN GEOLOGICAL INSTITUTE

Thank you for this opportunity to provide the American Geological Institute's perspective on fiscal year 2007 appropriations for geoscience programs within the subcommittee's jurisdiction. The President's budget requests significant cuts in the Department of Energy (DOE) research programs related to energy resources. In particular, the President's request would eliminate the Office of Fossil Energy's oil and natural gas technology research programs and the Office of Energy Efficiency and Renewable Energy's geothermal technology research program. Given the interest of the administration and Congress to reduce the Nation's foreign oil dependence and reduce gasoline prices, it seems like an inopportune time to eliminate programs that could help with these objectives. We hope that Congress will restore funding for these programs. AGI applauds the requested 14 percent increase for the largest supporter of physical science research in the United States, DOE's Office of Science, and encourages the subcommittee's full support for this increase. We also support the President's Advanced Energy Initiative which includes increased funding for clean energy research. The request focuses spending on solar, biomass/biofuels, hy-

drogen fuel, FutureGen and nuclear power, however, other clean energy alternatives, such as geothermal, could be included in appropriations while remaining consistent with national needs and objectives.

AGI is a nonprofit federation of 44 geoscientific and professional associations that represent more than 100,000 geologists, geophysicists, and other earth scientists. The institute serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role that the geosciences play in society's use of resources and interaction with the environment.

DOE FOSSIL ENERGY RESEARCH AND DEVELOPMENT

AGI urges you to take a critical look at the Department of Energy's Fossil Energy Research and Development (R&D), Natural Gas Technology R&D and Oil Technology R&D accounts as you prepare to craft the fiscal year 2007 Energy and Water and Related Agencies Appropriations bill. Over the past 5 years, members of Congress have strongly emphasized the need for a responsible, comprehensive energy policy for the country. The growing global competition for fossil fuels has led to a repeated and concerted request by Congress to ensure the Nation's energy independence. The President's proposal that these programs be eliminated is short-sighted and will not allow us to achieve energy independence.

The research dollars spent by these programs go largely to universities, State geological surveys and research consortia to address critical issues like enhanced recovery from known fields and unconventional sources that are the future of our natural gas supply. This money does not go into corporate coffers, but it helps American businesses remain competitive by giving them a technological edge over foreign companies. All major advances in oil and gas production can be tied to research and technology. AGI strongly encourages the conferees to restore these funds and bring these programs back to at least fiscal year 2003 levels.

Today's domestic industry has independent producers at its core. With fewer and fewer major producing companies and their concentration on adding more expensive reserves from outside of the contiguous United States, it is the smaller independent producers developing new technologies concentrated on our domestic resources. However, without Federal contributions to basic research that drives innovation, small producers cannot develop new technologies as fast, or as well, as they do today. The program has produced many key successes among the typical short-term (1 to 5 years) projects usually chosen by the DOE. And even failed projects have proven beneficial, because they've often resulted in redirection of effort toward more practical exploration and production (E&P) solutions. Ideally, DOE and private sector participants share the program's R&D funding on a 50/50 basis, with the government contributing actual dollars and the company contributing dollars or "in kind" products and services. To justify the use of public funds, new technology developed from such projects is made available to the industry.

In 2003, at the request of the Interior Appropriations Subcommittee, the National Academies released a report entitled *Energy Research at DOE: "Was It Worth It? Energy Efficiency and Fossil Energy Research 1978 to 2000"*. This report found that Fossil Energy R&D was beneficial because the industry snapped up the new technologies created by the R&D program, developed other technologies that were waiting for market forces to bring about conditions favorable to commercializing them and otherwise made new discoveries. In real dollars from 1986–2000 the government invested \$4.5 billion into Fossil Energy R&D. During that time, realized economic benefits totaled \$7.4 billion. This program is not only paying for itself, it has brought in \$2.9 billion in revenue. Why not continue to fund oil and gas R&D so we can attain the energy independence we need for stable and continued economic growth?

The Federal investment in energy R&D is particularly important when it comes to longer-range research with diversified benefits. In today's competitive markets, the private sector focuses dwindling research dollars on shorter-term results in highly applied areas such as technical services. In this context, DOE's support of fossil energy research, where the focus is truly on research, is very significant in magnitude and impact compared to that done in the private sector, where the focus is mainly on development. Without more emphasis on research, we risk losing our technological edge in this global and increasingly more expensive commodity.

As we pursue the goal of reducing America's dependence on unstable and expensive foreign sources of oil, we must continue to increase recovery efficiency in the development of existing domestic oilfields, conserving the remaining in-place resources. Since the 1980's, 80 percent of new oil reserves in this country have come from additional discoveries in old fields, largely based on re-examination of pre-

viously collected geoscience data. These data will become even more important in the future with development of new recovery technologies.

The research funded by DOE leads to new technologies that improve the efficiency and productivity of the domestic energy industry. Continued research on fossil energy is critical to America's future and should be a key component of any national energy strategy. The societal benefits of fossil energy R&D extend to such areas as economic and national security, job creation, capital investment, and reduction of the trade deficit. The Nation will remain dependent on petroleum as its principal transportation fuel for the foreseeable future and natural gas is growing in importance. It is critical that domestic production not be allowed to prematurely decline at a time when tremendous advances are being made in improving the technology with which these resources are extracted. The recent spike in oil and natural gas prices is a reminder of the need to retain a vibrant domestic industry in the face of uncertain sources overseas. Technological advances are necessary to maintaining our resource base and ensuring this country's future energy security.

DOE OFFICE OF SCIENCE

The DOE Office of Science is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. The Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science and, under the President's budget request, would be grown by 14 percent from about \$3.6 billion last year to \$4.1 billion. AGI asks that you support this much needed increase.

Within the Office of Science, the Basic Energy Sciences (BES) program supports fundamental research in focused areas of the natural sciences in order to expand the scientific foundations for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. BES also discovers knowledge and develops tools to strengthen national security.

The Basic Energy Sciences (BES) would remain the largest program in the office with an increase of 25 percent from \$1.134 billion in fiscal year 2006 to \$1.420 billion in fiscal year 2007 in the President's request. Within the BES, Chemical Sciences, Geosciences and Biosciences would receive a \$47.9 million increase over their fiscal year 2006 budget. About half of this increase would go toward the President's Hydrogen Initiative (\$6 million increase) and basic research related to energy technologies (\$22.4 million increase) and the other half would go toward nanoscale science research (\$22.2 million increase). Other programs would be reduced by \$3.2 million to make up the difference between these increases and the overall budget.

AGI strongly supports the requested increases for these programs.

Thank you for the opportunity to present this testimony to the subcommittee.

PREPARED STATEMENT OF THE ENERGY SCIENCES COALITION

Chairman Domenici, the Energy Sciences Coalition (ESC) expresses its great appreciation for the leadership you have shown as Chairman of the Energy and Water Development Appropriations Subcommittee. We applaud your vision of how the programs of the Department of Energy's Office of Science will lead to research discoveries and technological developments benefiting this and future generations.

The Energy Sciences Coalition is a broadly-based organization representing scientists, engineers and mathematicians in universities, industry, professional societies and national laboratories. We share your belief that the research supported by the Office of Science has and will make significant contributions to our Nation's security and standard of living.

ESC strongly and enthusiastically supports the President's fiscal year 2007 budget request of \$4.1 billion for the Department of Energy's Office of Science. This historic level of funding, outlined in the President's American Competitiveness Initiative, will allow the DOE to move forward with the tremendous scientific opportunities outlined in the Office of Science Strategic Plan and in its 20-Year Scientific Facilities Plan. It is also consistent with your PACE legislation and with the recommendations made by the National Academies' in its report, "Rising Above the Gathering Storm."

ESC believes that this landmark request is solid and necessary to keep United States science and engineering at the forefront of global research and development in the physical and biological sciences, computing and many other critical scientific fields. It is an investment in our future.

Our Nation benefits not only from the discoveries that will be made with this support, but also from the training of America's next generation of researchers. Such

training will be instrumental in maintaining our Nation's technological superiority in the international marketplace. The Office of Science also plays an extremely important and unique role in the design, construction, and operation of large-scale user facilities used by researchers supported by the Department of Energy, the National Institutes of Health and the National Science Foundation, as well as private industry researchers.

In closing, I again express the Coalition's gratitude for the leadership that you and your colleagues have demonstrated in supporting the important work of the Office of Science. Please do not hesitate to contact me if the Coalition can be of any assistance.

ATTACHMENT: FISCAL YEAR 2007 ENERGY SCIENCES COALITION FUNDING STATEMENT

Support the President's Request for \$4.1 Billion for the Department of Energy (DOE) Office of Science

The Energy Sciences Coalition (ESC) strongly and enthusiastically supports the President's fiscal year 2007 budget request of \$4.1 billion for the Department of Energy (DOE) Office of Science, a 14.1 percent increase above the fiscal year 2006 funding level. This historic level of funding outlined in the President American Competitiveness Act will allow the DOE to move forward with the tremendous scientific opportunities outlined in the Office of Science Strategic Plan and in its 20-Year Scientific Facilities Plan. It is also consistent with bipartisan legislation introduced in Senate (the "Protecting America's Competitive Edge" Act, or PACE legislation) and by recommendations made by the National Academies in its report, "Rising Above the Gathering Storm".

ESC believes that this landmark request is solid and necessary to keep United States science and engineering at the forefront of global research and development in the physical and biological sciences, computing and many other critical scientific fields. It is an investment in our future.

The mission of the Office of Science is to deliver the discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic and energy security of the United States. The DOE Office of Science is one of the primary sponsors of basic research in the United States, leading the Nation in its support for the physical sciences and critical to other fields such as computing and biology. Strong support for DOE scientific research is essential to advancing a broad array of research subjects in order to improve our energy, economic and national security and in addressing the ancillary issues such as super computing, nanotechnology, environmental remediation, climate change, genomics and life sciences.

ATTACHMENT: STATEMENT ENDORSEES

Fiscal Year 2007 ESC Funding Statement Endorsements

Alliance for Science & Technology Research; American Institute for Medical and Biological Engineering; American Institute of Physics; American Physical Society; American Society for Microbiology; American Society of Agronomy; American Society of Plant Biologists; American Society of Mechanical Engineers; Association of American Universities; Biophysical Society; Crop Science Society of America; Federation of Materials Societies; Florida State University; Fusion Power Associates; General Atomics; Indiana University; International Society for Optical Engineering; Iowa State University; Michigan State University; National Association of State and Land-Grant Universities; Ohio State University; Oregon State University; Princeton University; Rensselaer Polytechnic Institute; Soil Science Society of America; South-eastern Universities Research Association; Stanford University; University of California; University of Chicago; University of Tennessee; University of Wisconsin-Madison.

PREPARED STATEMENT OF THE INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

Members: The International Association Of Drilling Contractors; The International Association of Geophysical Contractors; The National Stripper Well Association; The Petroleum Equipment Suppliers Association; The Association of Energy Service Companies; Public Lands Advocacy; California Independent Petroleum Association; Colorado Oil & Gas Association; East Texas Producers & Royalty Owners Association; Eastern Kansas Oil & Gas Association; Florida Independent Petroleum Association; Illinois Oil & Gas Association; Independent Oil & Gas Association of New York; Independent Oil & Gas Association of Pennsylvania; Independent Oil & Gas Association of West Virginia; Independent Oil Producers Association Tri-State;

Independent Petroleum Association of Mountain States; Independent Petroleum Association of New Mexico; Indiana Oil & Gas Association; Kansas Independent Oil & Gas Association; Kentucky Oil & Gas Association; Louisiana Independent Oil & Gas Association; Michigan Oil & Gas Association; Mississippi Independent Producers & Royalty Association; Montana Oil & Gas Association; National Association of Royalty Owners; Nebraska Independent Oil & Gas Association; New Mexico Oil & Gas Association; New York State Oil Producers Association; Northern Alliance of Energy Producers; Ohio Oil & Gas Association; Oklahoma Independent Petroleum Association; Oklahoma Commission on Marginally Producing Oil and Gas Wells; Panhandle Producers & Royalty Owners Association; Pennsylvania Oil & Gas Association; Permian Basin Petroleum Association; Petroleum Association of Wyoming; Tennessee Oil & Gas Association; Texas Alliance of Energy Producers; Texas Independent Producers and Royalty Owners; Virginia Oil & Gas Association; and the Wyoming Independent Producers Association.

These organizations represent petroleum and natural gas producers, the segment of the industry that is affected the most when national energy policy does not recognize the importance of our own domestic resources. Independent producers drill 90 percent of domestic oil and natural gas wells, produce approximately 82 percent of domestic natural gas, and produce about 68 percent of domestic oil—well above that percentage of the oil in the lower 48 States.

Thank you for the opportunity to provide input on the critical need for the Department of Energy's Office of Fossil Fuels Oil and Natural Gas Technologies programs. The Independent Petroleum Association of America (IPAA), represents over 5,000 producers of domestic oil and natural gas. Independents drill 90 percent of the Nation's oil wells and produce 82 percent of the Nation's natural gas and 68 percent of domestically-produced oil. IPAA urges the subcommittee to maintain funding for the Department of Energy's (DOE), Office of Fossil Fuels Oil and Natural Gas Technologies programs at \$64 million, the appropriated level for fiscal year 2006. In addition, IPAA urges the subcommittee to fund the non-conventional onshore/ultra-deepwater/small producer program and the methane hydrates technology program at the authorized levels included in the Energy Policy Act of 2005 (\$100 million and \$20 million respectively.)

IPAA is concerned that the administration's "zero" budget request for the Department of Energy's oil and natural gas technologies programs for fiscal year 2007 will diminish the development of key exploration and production technologies designed to improve domestic oil and natural gas production.

This is the second year that the administration has proposed to terminate funding for these vitally important programs, 85 percent of which historically have focused on exploration and production activities associated with independent producers. In most instances, these companies do not have access to the in-house technology development capabilities of the larger, integrated, multi-national oil companies. Therefore, federally funded research and development (R&D) should be considered essential to maintain a viable, robust, domestic producing sector.

With respect to both the non-conventional onshore/ultra-deepwater/small producer program and the methane hydrates program the administration included language in its budget request to repeal the former, and to provide no funding for the latter, though both are authorized in the Energy Policy Act of 2005. IPAA believes that these programs will play a crucial role, if we are to reduce our energy dependence in the years to come.

Full, consistent funding for development of all these programs is essential to meet the President's objectives to reduce our dependency on foreign sources of energy. In the case of the existing oil and gas technologies programs, they have provided a variety of functions, primarily focusing on domestic exploration and production research and development activities, resulting in sustaining and in most instances, increasing domestic oil and gas production. Such research and development activities, conducted by universities, DOE laboratories and the private sector have culminated in the development of exploration and production (E&P) technologies, which have resulted in an increase in production of product, in a more environmentally sensitive manner, with a much smaller environmental footprint.

In a statement issued on October 17, 2005, in conjunction with DOE's announcement of 13 new oil and gas technologies/R&D projects, Secretary of Energy Samuel Bodman said, "This administration continues to seek out and develop new energy options to support our growing economy." He continued, "The projects we are funding today are an investment in our Nation's energy security and economic security, and will help us obtain the maximum benefit of our domestic energy resources in an environmentally sensitive way."

The statement went on to point out that the sources of unconventional natural gas that these projects would assist in the development of contain an estimated 700

trillion cubic feet (Tcf), compared to an industry estimate of 190 Tcf in conventional natural gas reserves.

The statement also attempted to put into context the significance of accessing these reserves, noting that “natural gas accounts for nearly one quarter of total domestic supply, a share that will rise with future technological advancements such as those being investigated by the funded projects.”

Similarly, development of methane hydrates and non-conventional onshore/ultra-deepwater represents tremendous potential for supplying America’s growing natural gas needs. In the case of methane hydrates, the U.S. Geological Survey (USGS) estimates the United States to have about 200,000 trillion cubic feet of methane hydrate. Meanwhile, the ultra-deep area alone will tap 1,300 trillion cubic feet of technically recoverable reserves—enough to meet 60 years of demand at current rates of consumption.

DOE’s programs play an essential role in the training and development of qualified people for the oil and gas sector, a challenge which continues to grow at an alarmingly rapid rate. The DOE oil and natural gas programs provide vital support to petroleum engineering departments across the country. According to a letter dated April 4, 2005 from the University of Texas’ Department of Petroleum and Geosystems Engineering to the Subcommittee on Energy and Water Development Appropriations, “. . . our ability to retain the best faculty who are needed to train Petroleum Engineers for the coming decades depends entirely on our being able to provide research funding to the faculty.” The letter goes on to say, “Lacking this opportunity, there will not be many viable petroleum engineering programs left in the U.S.” Ironically, this statement is reflective of goals that are outlined in the recently introduced Protecting America’s Competitive Edge Act (PACE), and the President’s American Competitiveness Initiative.

IPAA commends the President’s laudable goal expressed in his recent “State of the Union” address, in which he laid out a “game plan” of appreciably reducing our dependency on foreign sources of oil by 2025. However, our Nation’s economy is currently fossil fuel “dependent”—65 percent of domestic energy supply coming from oil and natural gas—and will continue to be for the foreseeable future. Therefore, the Nation finds itself at a time when concern over increasing dependence on foreign oil is at an all time high, escalating fuel prices are running roughshod over the American consumer in the form of home heating bills and gasoline prices, and businesses are relocating and taking valuable jobs overseas with them in the pursuit of affordable fuel costs. The administration’s failure to recognize the importance of investing in oil and natural gas R&D to develop critically-needed recovery technologies is all the more perplexing. Domestic oil and natural gas reserves should be front and center in any balanced national energy policy, treated comparably with renewable energy sources, coal and nuclear. Yet, the administration would essentially eliminate oil and natural gas from DOE’s energy portfolio.

IPAA urges the committee to support full funding for these vital programs.

PREPARED STATEMENT OF THE CENTER FOR ADVANCED SEPARATION TECHNOLOGIES,
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Chairman Domenici and members of the subcommittee, I represent the Center for Advanced Separation Technologies (CAST), which is a consortium of seven leading U.S. mining schools. I appreciate the opportunity to submit this testimony requesting your committee to add \$3 million to the 2007 Fossil Energy Research and Development budget, U.S. Department of Energy, to support CAST. Research in advanced separations is an integral part of the President’s Hydrogen from Coal Research Fuels Initiative, and is critical for the continued supply of energy for economic growth and strategic minerals for national security.

I am joined in this statement by my colleagues from the consortium: Ibrahim H. Gundiler, New Mexico Tech; Maurice C. Fuerstenau, University of Nevada-Reno; Richard A. Bajura, West Virginia University; Peter H. Knudsen, Montana Tech of the University of Montana; Richard J. Sweigard, University of Kentucky; and, Jan D. Miller, University of Utah.

FUNDING REQUEST FOR THE CENTER FOR ADVANCED SEPARATION TECHNOLOGIES

The Center for Advanced Separation Technologies (CAST) is a consortium of the seven universities listed above. It was formed in 2001 to develop advanced technologies that can be used to efficiently produce cleaner fuels in an environmentally acceptable manner and to study the basic sciences and engineering involved. The new technologies developed as a result of CAST research and the highly skilled personnel trained during the course of its activities will help the United States meet

the challenges of energy independence. These missions are consistent with President Bush's American Competitiveness Initiative, announced in his 2006 State of the Union Address. The President's new program includes doubling R&D commitments to basic research, supporting universities for world-class education and research opportunities, and training a work force with skills that can be used to better compete in the 21st century.

ORGANIZATION

The Center for Advanced Separation Technologies (CAST) was formed initially between Virginia Tech and West Virginia University with the objective of developing advanced solid-solid and solid-liquid separation technologies that can help the U.S. coal industry produce cleaner solid fuels. In 2002, five other universities listed above joined the consortium to develop crosscutting technologies that can also be used in the U.S. minerals resources industry. As a result, the scope of CAST research was expanded to studies of chemical/biological separations and environmental control.

As a consortium, the Center can take advantage of the diverse expertise available in the member universities and address the interests of the different geographical regions of the country. Working together as a consortium is consistent with the recommendations of a recent National Research Council (NRC) report on the U.S. Department of Energy's fossil energy research, which states that "consortia are a preferred way of leveraging expertise and technical inputs to the mining sector," and recommends that DOE should support "academia, which helps to train technical people for the industry."

PROGRESS AND NEXT STEP

At present, a total of 45 research projects are being carried out at the seven CAST member universities. Of these, 12 projects are in solid-solid separation, 5 in solid-liquid separation, 12 in chemical/biological separation, 7 in modeling and control, and 6 in environmental control. The project selection was made by an industry panel according to the priorities set forth in the CAST Technology Roadmap developed in 2002 by industry representatives. Research results have been presented at two workshops, the first in Charleston, WV, November 19–21, 2003, and the second in Blacksburg, VA, July 26–27, 2005. Both meetings enjoyed strong participation from industry. The third workshop will be held in July 2007 in Blacksburg.

CAST research has been focused on removing impurities (e.g., ash, sulfur, mercury and other toxic elements) from coal. Various solid-solid and solid-liquid separation technologies are used to remove these impurities. In general, the efficiency of separation diminishes sharply with decreasing particle size. As a result, coal companies discard coal fines to impoundments. In the United States, approximately 70 to 90 million tons of coal fines are being discarded annually according to a National Research Council report. The report was issued as a result of a congressional directive to investigate a major failure of a fine coal impoundment in Kentucky in October, 2000, which caused 300 million gallons of coal sludge to flood an active mine and neighboring creeks and rivers. There are more than 713 active water and slurry impoundments in the eastern United States, many of which are rated "high risk." The report suggested a study to identify appropriate technologies that can eliminate the need for slurry impoundments.

CAST has been developing advanced separation technologies that can help U.S. coal companies recover fine coal rather than discard it to impoundments. One company, Beard Technologies, Inc., is currently building a plant designed to recover fine coal from a large impoundment in Pineville, WV, using the technologies developed by CAST. The plant will be the first to recover practically all of the coal from a waste impoundment without the benefit of a tax credit. If the project is successful, it is anticipated that many other companies will follow suit. The enabling technology used in the Pineville recovery plant is the use of chemical additives that can remove moisture from fine coal during vacuum filtration. CAST is developing several other dewatering technologies, which include hyperbaric centrifuge, hyperbaric horizontal belt filter (HHBF), and a flocculant injection system. In a recent pilot-scale test conducted with the hyperbaric centrifuge, it was possible to reduce the moisture of a fine coal (smaller than 0.15 mm) to below 10 percent by weight without using chemical additives. The technology has been licensed to Decanter Machine Company, Johnson City, TN, which plans to construct a prototype unit for onsite testing. Development of the HHBF technology is also making progress. Construction of a pilot-scale test unit has been completed, and is ready for a trial. This new dewatering technology is also designed to reduce fine coal moisture to less than 10 percent. The flocculant injection system is already in use by many coal companies to minimize the loss of fine coal associated with the use of screen-bowl centrifuges, which rep-

resent the most widely-used conventional dewatering technology in the U.S. coal industry. In addition, Arch Coal Company is seriously considering installation of a deep-cone thickener, as a result of the work conducted at CAST, to obviate the need to build a fine coal impoundment.

Despite the importance of fine coal cleaning, the bulk of the coal being cleaned today is coarse coal, most of which is being cleaned of impurities using density-based separation methods. Therefore, there is an interest in determining separation efficiencies using density tracers. Typically, plastic blocks of known densities are added to a feed stream, collected manually from product streams, and counted to determine the efficiency of separation—a process which is cumbersome and entails inaccuracies. Therefore, a new method has been developed in which each tracer is tagged with a transponder so that the destination of each tracer can be monitored electronically. The new technique has been tested successfully in several plants and is ready for commercial deployment. Precision Testing Laboratory, Beckley, WV, plans to market the new technology. Its use can help coal companies maximize the efficiency of cleaning coarse coal.

Much of the basic scientific principles and technologies involved in coal cleaning also apply to processing ores. Therefore, CAST has been developing crosscutting technologies that can be used in both coal and minerals industries. As an example, a joint Krebs Engineers-CAST research resulted in the development of a novel hydrocyclone that can efficiently remove clay (slimes) from coal. The same technology can also be used in processing many industrial minerals. For instance, removal of clay minerals is an *a priori* requirement in processing the potash (KCl) ores in New Mexico. Laboratory experiments showed that more efficient desliming can increase potash recovery by 4 to 6 percent downstream. Implementation of these new technologies being developed at CAST will help the industry remain competitive against foreign producers and retain high-paying jobs in the country.

The United States is the second-largest copper producer in the world. However, much of the ores being mined are low grade, which makes it difficult for U.S. companies to compete internationally. Traditionally, copper is extracted from an ore through a series of processes, including grinding, flotation, smelting, and refining, which are energy-intensive and hence costly. CAST is currently developing new technologies to facilitate the application of alternative leaching/impurity removal/electrowinning processes that can replace the costlier steps of grinding, flotation, smelting, and refining. The alternative processes should require substantially lower capital costs and reduce energy consumption by 50 percent.

The mining industry has been extracting gold using cyanide, which is toxic. Therefore, CAST has been developing an environmentally benign extraction method using alkaline sulfide. Bench-scale continuous tests conducted using this new lixiviant showed that the extraction efficiency is as good as those obtained using cyanide.

In addition to the more practical projects described above, CAST has also conducted fundamental research. As an example, a mathematical model has been developed to describe the flotation process, which is the most widely-used and versatile solid-solid separation process used in both the coal and minerals industries. The model is based on first principles so that it has predictive and diagnostic capabilities. In another project, a computational fluid dynamic (CFD) simulation technique has been used to design optimal flotation machines. This project is co-funded by Dorr-Oliver EIMCO, Utah. In addition, the surface forces acting between two microscopic surfaces immersed in water have been measured using the atomic force microscope (AFM) and the surface force apparatus (SFA). The results show that strong attractive forces are present between hydrophobic surfaces, the origin of which is not yet known. The newly-discovered surface forces, which are referred to as “hydrophobic force” play an important role in the separation of hydrophobic energy “minerals” such as coal, oil, bitumen, and kerogen from hydrophilic waste minerals such as clay, silica and others.

FUNDING REQUEST AND RATIONALE

The United States is by far the largest mining country in the western world, followed by South Africa and Australia. In 2004, the U.S. mining industry produced \$63.9 billion of raw materials, including \$19.9 billion of coal and \$44 billion of minerals. Australia is a smaller mining country but has five centers of excellence in advanced separations as applied to coal and minerals processing. Last year, Australia established the Mineral Science Research Institute, a consortium of four mining schools, with a funding of \$22.6 million for the initial 5-year period. In the United States, CAST is the only federally-funded consortium serving the mining industry. According to a congressional testimony by K. Mark Le Vier, President of the Mining

and Metallurgical Society of America, 50 percent or more of the faculty in the U.S. mining schools will retire in the next 5 years. Continued funding of the CAST program is critical for producing a trained workforce for the industry.

CAST has been developing a broad range of advanced separation technologies. Although it is a relatively new research center, some of the projects have yielded technologies that are already in use in industry. Many other promising research projects are on-going and require continued support. Working as a consortium is an effective way of exchanging ideas and utilizing diverse expertise required to solve major problems. Continued funding will allow CAST to develop advanced technologies that can be used to produce cleaner coal in an environmentally acceptable manner. Furthermore, the advanced technologies can be used not only to clean up the troublesome waste impoundments that have been created in the past but also to eliminate the need to create them in the first place.

For fiscal year 2007, CAST is requesting \$3 million to (i) develop crosscutting separation technologies, (ii) better understand the basic sciences involved, and (iii) produce highly-skilled engineers and scientists. Although the aim of the proposed research is to benefit the U.S. mining industry, its results should also help the President's initiatives to develop a hydrogen economy and to produce biofuels more efficiently (e.g., separating ethanol from water without distillation). Further, the results can be used to develop technologies for extracting kerogen from oil shale, of which the United States has 72 percent (1.2 trillion barrel equivalent of oil) of the world's reserves. A steady supply of fuels and strategic minerals is critical for the continued growth of the economy and for national security.

PREPARED STATEMENT OF FUSION POWER ASSOCIATES

In marking up the fiscal year 2007 budget for the Dept. of Energy, NNSA, Inertial Confinement Fusion Program, I strongly urge you to provide funds, unrequested by the DOE, for Z-pinch repetitively pulsed power program (approximately \$15 million) at Sandia National Laboratories and for High Average Power Laser efforts (approximately \$25 million). The Congress has supported the High Average Power Laser program for several years. The Z-pinch repetitively pulsed power program was funded by Congress in fiscal year 2005 but was not specifically funded in fiscal year 2006 and hence was drastically reduced this year.

These programs are needed to capitalize on the successes of the NNSA single pulse inertial confinement fusion efforts for weapons research so that the technology will be available in a timely manner for energy applications.

Thank you for your consideration.

PREPARED STATEMENT OF THE GREAT BASIN CENTER FOR GEOTHERMAL ENERGY, UNIVERSITY OF NEVADA, RENO

Senate Energy and Water Subcommittee, our need for energy independence and indigenous energy sources has never been greater, yet the U.S. DOE funding for geothermal energy research appears to be in jeopardy in fiscal year 2007. As part of a comprehensive energy plan, geothermal energy, among other renewable energy resources, must be utilized to help offset fossil fuel uses, diversify the Nation's power supply, and provide base load power. Geothermal energy should be one component of a well-balanced implementation of the National Energy Policy. As the National Research Council concluded (Renewable Power Pathways, 2002), given the enormous potential of the geothermal resource base, research by the U.S. DOE should be increased, particularly into technologies that can reduce risk, reduce costs, or expand the accessible geothermal resource base.

As a personal supporter of geothermal and renewable energy sources, and as a long-time researcher in geothermal energy, I urge your support of renewable energy sources in the coming budget cycles. We need to increase, not decrease, geothermal energy support in the Department of Energy. I express my support here for funding DOE's geothermal research efforts in fiscal year 2007 and beyond at no less than \$30 million. The currently funded research at the Great Basin Center for Geothermal Energy has found, and continues to find, new geothermal resources in the Great Basin and we have developed new technologies to locate, characterize and assess these resources with a relatively small investment from the DOE geothermal technologies program. These programs should be continued, and development of geothermal resources accelerated. We should also continue evaluating geothermal energy for the production of hydrogen, for which there is currently an actively-funded research program here at UNR. Continued geothermal research will benefit the in-

dustry, and a robust geothermal industry will greatly contribute to alleviating national security energy concerns.

Thank you for consideration of this matter.

PREPARED STATEMENT OF DAVID J. BARDIN

Mr. Chairman and members of the subcommittee, as a private citizen who served at DOE during its formation, I urge you to:

- (A) Restore Office of Fossil Energy funding, that the administration proposed to zero out, for petroleum research and development (including CO₂-EOR) and petroleum technology transfer to independent oil producers and others, and
- (B) add \$4 million, half to OFE and half to the Energy Information Administration:

- (1) to enhance OFE and EIA capabilities to assess domestic oil resources and recovery potentials—especially for production of liquid fuels from “continuous-type” formations that are scarcely touched today—and,
- (2) to stand up a “Red Team” (a) to challenge conventional-wisdom “Blue Team” projections that lower-48 States onshore production will inevitably decline from year to year and (b) to identify in timely fashion critical infrastructure issues that significant growth potentials will likely raise.

A new crude oil production “play” in Montana and North Dakota (depicted this month by the Wall Street Journal[1]) illustrates compelling reasons for these recommendations.

BAKKEN FORMATION OF THE WILLISTON BASIN

Montana’s production from the Bakken formation has more than doubled each year since discovery of the Elm Coulee Field in 2000, averaging 43,000 bbl per day during 2005, and exceeding 50,000 bbl per day by year end.[2] This is already the largest onshore discovery in the lower-48 States in half a century; it is still growing. ND Bakken production is also up. OFE recently released a report[3] noting that studies have suggested as much as 150 billion barrels (perhaps more) of total resources in place in just the North Dakota portion of the Williston Basin’s Bakken. The Wall Street Journal reported an unpublished estimate of more than 200 billion barrels of recoverable oil in place.[4]

The 13 operators involved in MT’s Elm Coulee field are independents.[5] None of the oil industry giants is involved in the Bakken play; those giant companies concentrate their efforts on multi-billion-dollar projects overseas, in Canada, or in the deep waters of the Gulf of Mexico. Today’s MT and ND play, where a well may cost a few million dollars, can produce enough to affect an independent’s “bottom line”—but not a giant’s.

RESTORE OFE BUDGET

Dry holes are virtually unknown in the continuous-type Bakken Source System, but profitable production depends on applying technologies that will work for this resource. Some of the technologies are ready today—if brought to the attention of the operators.

The Petroleum Technology Transfer Council engages in just that valuable work, for the Bakken resources (and others), yet the administration unwisely proposes to zero out Federal support for the PTTC (which is primarily funded through OFE’s budget).[6]

Moreover, more R&D is still needed to adapt technologies to the circumstances of the Bakken—with plenty of trial and error in all likelihood. Otherwise 80–98 percent of the oil may remain stranded in the rocks.[7] Yet the administration would zero out R&D.

Congress should make funds available to OFE, at least at last year’s level, to sustain technology transfer and help solve R&D challenges, on a matching basis. Federal funding to support onshore innovations is justified, particularly where independents are leading the way.

Ideally, Congress should assure dedicated funding for onshore oil and associated gas R&D (as well as non-associated gas funding, such as the Gas Research Institute used to provide). Past industry and DOE efforts succeeded in showing how to produce more domestic non-associated gas resources—notably including such continuous-type resources as coal bed methane and the Antrim Shale of the Michigan Basin; and most recently the Barnett and Bossier Shales.[8] The MT and ND Bakken resources invite similar breakthroughs for continuous-type crude oil resources.

Congress should also make new funds available to EIA and OFE in order to enable DOE to provide critically important information—to the investment community as well as independent producers. Restoration of EIA capabilities might produce dividends of strategic importance to our country over the next half century. A “Red Team” of OFE and EIA (and possibly others) might help avoid painful surprises—e.g., by exposing risks that transportation infrastructures may be inadequate to serve increases in production.

Frankly, EIA projections (in all cases examined) now discourage investments—both in production and in transportation facilities—by seeming to show that domestic, on-shore, lower-48 production must decline steadily over 25 years from close to 3 million barrels a day to barely 2 million. Is that necessarily so?[9]

EIA models for crude oil production rely on extremely cautious assessments of technically-recoverable resources by the USGS. In contrast, EIA independently (and less cautiously) models non-associated natural gas resources and recoverability. Some OFE assessments (integral to research program efforts) may also have been modestly more progressive than USGS’s.

The estimate of total U.S. technically recoverable crude oil resources on which EIA relies (175 billion barrels) includes barely 2 billion barrels in continuous-type deposits such as the Bakken.[10] Contrast Leigh Price’s estimate (held back by USGS) of over 200 billion barrels of technically recoverable resource in the Bakken continuous-type deposit alone. The discrepancy begs for frank acknowledgement and rigorous investigation.

It is too many years since DOE prepared its own crude oil resource assessment. The Bakken Source System offers a fine opportunity to try out a DOE alternative to USGS. The current MT and ND Bakken play has already increased domestic oil production at an important time for our country and demonstrated that the 1995 USGS estimate (still used by DOE) is far too low.[11]

Congress should direct OFE, working with EIA, to perform a resource appraisal of the Bakken Source System of the MT and ND portions of the Williston Basin as an example of continuous crude oil resources in a self-sourced reservoir. Such reservoirs:

- represent a large portion of what is left to be found on-shore in the lower-48 States generally and in the Rocky Mountain region particularly;
- are under-studied; and
- have a significant potential that may not have been adequately characterized in the past.

OFE has performed similar appraisals as part of its research program. EIA used to perform such appraisals for foreign resources in Russia, the Middle East, and other areas.

A new appraisal of these ND and MT resources here at home could be important in and of itself as well as an exciting experiment that may be applicable elsewhere in the lower-48 States, especially the Rocky Mountain region. I envisage a series of reports:

- Step one, the easiest, would simply rerun EIA long-term projections substituting an assumed increment of Rocky Mountain technically recoverable Bakken oil resource over and above the USGS assessment.
- Step two would arrive at an EIA/DOE estimate (or range) weighing various studies suggesting over 150 billion barrels of Bakken oil in place, including Price’s 5-year-old estimate of 413 billion barrels in place of which half is technically recoverable. This step will want a “Red Team” assigned to challenge and debate conventional “Blue Team” views within DOE.
- Step three would consider how EIA’s existing models would handle a huge increase in assessed lower-48 resources.
- Step four would ask whether EIA’s existing models deal adequately with issues such as expansion of crude oil pipeline capacity and competition between USA oil production and syn-crude and other crude oils exported by Canada. EIA would do well to enlist expertise of USGS and others on such issues.
- Step five might lead to modifications of EIA models.
- Step six could entail OFE assessments of technically recoverable resources using “next generation” CO₂ and other enhanced oil recovery technologies to more fully recover vast Bakken oil resources.
- Seventh, and most important, would be DOE leadership to identify, in cooperation with the States of Montana and North Dakota and industry (and our Canadian friends), potential prerequisites for bringing barely tapped resources to market (e.g., increasing availability of geologic and other data, learning lessons from Bakken well histories, deploying advanced production technologies, plan-

ning for expanded infrastructure on a timely basis) and to foster effective basin-specific moves to get on with the job.

Congress should fund restoration of EIA's capacity to monitor and inform about technology innovations in the oil and gas production industry. Such information could improve EIA's take on recoverability of resources for its long-term projections.

Technology goes to the heart of energy performance. Yet no one can really evaluate USGS technology assumptions because USGS won't disclose estimates of resources in place. An alternative DOE assessment of the Bakken should certainly be transparent as to resources in place, thereby challenging people inside and outside the industry to invent ways to enhance recovery factors.

The bottom line goes far beyond assembling information. We want (a) to understand more fully the value of our Nation's untapped oil resources in the overall public interest in the broadest sense—including oil resource in the Bakken (very little of which involves federally-owned land)—and (b) to anticipate downstream issues, such as today's impact of Canadian upgraded syn-crude, diluted bitumens, and heavy oils.

CONCLUSION

In the face of energy uncertainty and insecurity, Congress should fund and demand more R&D, technology transfer, and information about domestic crude oil potentials and challenges because:

- so much domestic oil remains stranded;
 - supporting R&D and technology transfer can help mobilize those resources;
 - giant oil companies, on whom the administration would rely, don't do enough;
 - too much of our domestic resources are unknown to Congress and the public;
 - we now project undue helplessness to ourselves, our friends, and our enemies.
- Thank you.[12]

END NOTES

[1]"Second Look: WILDCAT PRODUCER SPARKS OIL BOOM ON MONTANA PLAINS: After Majors Pulled Out, Mr. Findley Drilled Anew; Size of Find Still Unclear", WSJ Apr. 5, 2006, p. A1.

[2]On April 9 the American Association of Petroleum Geologists conferred its Outstanding Explorer Award on Richard L. "Dick" Findley of Billings, MT, in recognition of outstanding achievement in exploration for petroleum—citing him as "an intrepid oil finder, accomplished stratigrapher, and entrepreneur for his efforts and imagination in discovering the 'sleeping' giant Elm Coulee oil field in the Bakken Formation, Williston Basin, Richland County, Montana."

[3]Advanced Resources International, February 2006, Basin Oriented Strategies for CO₂ Enhanced Oil Recovery: Williston Basin, prepared for the Department of Energy Office of Fossil Energy, part of a series on increasing domestic oil production.

[4]A comprehensive geological report by Leigh C. Price (a USGS scientist for 27 years), documented his estimate of 413 billion barrels in place and suggested why over half could be recovered. After Price's untimely death in August 2000, USGS "misplaced" that document, but the Energy and Environmental Research Center of the University of North Dakota has posted it as a free download at www.undeerc.org, and the Petroleum Technology Transfer Council has posted a link among its rich collection of Bakken case studies. See www.mines.edu/research/PTTC/ ("Seminal Bakken Paper"). Price, L.C. "Origins and Characteristics of the Basin-Centered Continuous Reservoir Unconventional Oil-Resource Base of the Bakken Source System, Williston Basin".

[5]Source.—Jim Halvorson, MT Oil & Gas Conservation Board.

BAKKEN CRUDE OIL—ANNUAL PRODUCTION—ELM COULEE FIELD [BBL/YR]

Company Name	2000	2001	2002	2003	2004	2005
Armstrong Operating, Inc.		11,281	21,774	22,562	29,748	35,018
Burlington Resources Oil & Gas Company LP					218,066	1,323,852
Chaparral Energy, LLC						96,654
Continental Resources Inc ...				90,101	853,228	2,810,965
EOG Resources, Inc.				73,824	660,040	1,018,896
Headington Oil LP		20,788	145,610	1,293,039	2,554,072	3,675,139
Lyc0 Energy Corporation	21,164	245,715	630,691	1,147,021	2,406,618	4,035,471

BAKKEN CRUDE OIL—ANNUAL PRODUCTION—ELM COULEE FIELD [BBL/YR]—Continued

Company Name	2000	2001	2002	2003	2004	2005
Nance Petroleum Corporation				34,665	241,559	807,487
Petro-Hunt, LLC				48,883	308,299	376,506
Slawson Exploration Company Inc					99,900	815,272
Staghorn Energy, LLC					53,342	20,942
Stone Energy Corporation						214,252
Westport Oil And Gas Co., L.P.					140,254	483,059

[6] See www.pttc.org and PTTC's Rocky Mountain regional page, cited in note 4, for examples of presentations on Bakken oil geology and technology at Rocky Mountain forums. See "World Oil"'s March 2006 issue for important hands-on technology information that the PTTC helps to publish and spread. T. Lantz and C.B. Wiley, "Learning process optimizes horizontal drilling and completion techniques" also posted at http://www.pttc.org/case_studies/PTdigest03-06.htm.

[7] The current play started with one horizontal well (10,000 feet deep vertically extending 4,000 feet laterally) completed in Richland County, MT, in the year 2000. That well aimed at brittle, dolomite rocks adjacent to the more plastic Bakken shale and used a brand-new technology to fracture the lateral part of the well (a method of stimulation that the operator recently repeated). These 13 operators invested successfully, seeking oil in the most prolific part of the Bakken Source System (the adjacent brittle rocks) while avoiding the shale itself (at which a previous, disappointing horizontal play had aimed). With the help of service companies, they apply new technologies that are readily transplanted to their wells (notably fracturing a lateral well bore). But the next step demands costly trial and error experiments to figure out how best to enhance production of different parts of the over-pressured Bakken Resource System oil. For example, maximum crude oil recovery calls for injecting a fluid, such as carbon dioxide, into rocks in order to maintain reservoir pressures and flow of the oil. During trial and error, some operators have to give up a part of their land holdings, some of their wells, surrendering their production today to experiment for the future of everyone in the industry—with no certainty of success.

[8] National Research Council, 2001, Energy Research at DOE: Was It Worth It?—Energy Efficiency and Fossil Energy Research 1978 to 2000.

[9] Cf. McCabe, P.J., 1998, Energy Resources—Cornucopia or Empty Barrel? AAPG Bulletin, v. 82, p. 2110–2134, and Caruso, G., 2005, When Will World Oil Peak? 10th Annual Asia Oil & Gas Conference, Kuala Lumpur, Malaysia.

[10] U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2004 Annual Report, App. G, p. G–3. This nationwide 2 billion barrels of continuous-type resources includes USGS estimate of 150 million barrels of undiscovered, technically-recoverable Bakken oil.

[11] The USGS baseline, released in 1995 for the entire Bakken system in MT and ND combined, totaled 150 million barrels of undiscovered, technically-recoverable oil for three sub-areas, with 70 million of those barrels in an "intermediate" area that includes the current MT Bakken play—which has already produced 30 million of those 70 million barrels since 2000. Bakken wells are expected to produce for 25 years or more. Tens or hundreds of billions of barrels of Bakken oil may reside in place—making recovery factors (and technology to enhance recovery) strategically critical.

[12] Mr. Bardin is Of Counsel to Arent Fox Kintner Plotkin & Kahn, PLLC (as a retired member) where he specialized in public utilities, energy and environmental law. Before joining Arent Fox in 1980, he served as Deputy Administrator of the Federal Energy Administration (1977) and Administrator of the Economic Regulatory Administration in the Department of Energy (1977–79).

PREPARED STATEMENT OF THE DETROIT DIESEL CORPORATION

Detroit Diesel Corporation (DDC), a DaimlerChrysler Company, provides this statement for the record addressing the administration's fiscal year 2007 budget request for the Department of Energy's Office of FreedomCAR and Vehicle Technologies (OFCVT). Specifically, the following line items and recommendations are addressed in this statement:

- Heavy Truck Engine*.—\$20.0 million funding recommended;
- Waste Heat Recovery (21CT)*.—\$4.806 million funding recommended;
- Combustion and Emission Control (21CT)*.—\$7.680 million funding recommended;
- Advanced Petroleum Based Fuels (21CT)*.—\$4.511 million funding recommended.

We generally support the administration's budget request for OFCVT, but we respectfully urge the committee to consider further enhancements to critical key line items that require prompt and immediate attention to reduce the U.S. demand for petroleum. These key line items will have immediate near-term impact on energy security, will decrease emissions of criteria air pollutants and greenhouse gases, and will enable the U.S. transportation industry to sustain a strong and competitive position in the domestic and world markets. Specific relevant OFCVT R&D programs enjoy substantial industry cost share demonstrating a matched commitment by the U.S. industry. In order to bring to fruition the intended results, these programs require sustained or increased levels of funding.

DDC's world headquarters and its main manufacturing plant are located in Detroit, Michigan. DDC employs over 4,000 persons who design, manufacture, sell and service engines for the transportation and power markets. Our products cater to heavy-duty trucks, coach and bus, automobiles, construction, mining, marine, industrial, power generation and the military. DDC has operations and manufacturing centers in various regions of the United States, along with a network of over 100 distributors and 2,700 dealers throughout the United States and worldwide. The DDC Series 60 engine has revolutionized the truck engine technology, consistently setting new global performance, fuel economy and life cycle cost standards. It has been the most popular heavy-duty truck engine in the United States for the past 14 years.

As a founding member of the 21st Century Truck Partnership, DDC supports Department of Energy efforts described in Energy Secretary Bodman's comments to the SAE Government Industry meeting on May 10, 2005 that "through the 21st Century Truck Partnership, and similar initiatives, our Department is expanding the use of clean diesel, and helping to reduce our dependence on foreign oil, improve energy efficiency, and develop new, environmentally friendly fuels to power our economy in the 21st century." In this regard, our comments will focus on the program line items that provide substantial potential payback for this important area of national interest.

We generally support the administration's budget request, while respectfully urge the committee to consider further enhancements to the following three line items under the proposed fiscal year 2007 Advanced Combustion Engine R&D program element: Heavy Truck Engine, Waste Heat Recovery, and Combustion and Emission Control, as well as the Advanced Petroleum Based Fuels line item under the Fuels Technology program element.

The Heavy Truck Engine has a fiscal year 2007 request of \$14.490 million. The 2010 Federal emissions mandates require an extremely aggressive R&D development plan to identify and implement new technologies. Recent specific findings suggest that EPA's initial estimates have underestimated the negative economic impact of the U.S. 2004 regulations by an order of magnitude. The 2007/2010 mandates will further reduce both NO_x and particulate emissions by an additional 90 percent from the 2004 levels. The technological complexities of meeting highly stringent emissions reduction while maintaining and ultimately improving the fuel economy within an extremely short time frame is the toughest challenge ever faced by the U.S. heavy-duty transportation industry. We believe this provides the strongest rationale for significant increases in government support to these competitively bid, collaborative, 50/50 cost-shared R&D programs. DDC is investigating advanced combustion systems, alternative emissions reduction technologies including engine and exhaust aftertreatment systems, and smart control strategies within an integrated powertrain. We urge the committee to consider increasing the Heavy Truck Engine line item by an additional \$5.51 million above the fiscal year 2007 budget request (Total=\$20 million) to assert and support the urgency of accelerated development of these related high-risk emerging technologies.

The 21CT portion of the Waste Heat Recovery has a fiscal year 2007 request of \$3.806 million. This line item has a potential of making a significant contribution to the overall efficiency of the heavy-duty diesel engine by utilizing the thermal energy of the exhaust gases which is currently lost. DOE's attention to this subject is supported by a number of new collaborative R&D contracts in this area. We believe that the budget should be reflective of the fuel-saving potential of this research, and recommend increasing this line item by \$1 million to \$4.806 million in fiscal year 2007.

The Combustion and Emission Control activity focuses on the development of advanced emission control technologies for clean diesel engines for U.S. personal transportation vehicle applications as well as a heavy truck component supporting the goals of the 21st Century Truck Partnership. For decades to come, clean diesel engines are the most relevant solution simultaneously offering significant fuel economy savings, reduced exposure to climate change issues and a cleaner environment. Initial developments show potential for lower emissions meeting the mandated 2007/2010 levels while maintaining the diesel engine's inherently superior fuel efficiency. The initial performance results are compelling, but many questions remain unanswered regarding emerging technologies for aftertreatment and integration of a total technically viable system. The administration's \$3.680 million request for the 21CT portion of this budget line item is significantly lower than the historical level of the last few years. We suggest enhancing this by an additional \$4 million (Total = \$7.680 million) to handle the urgent technical issues of the relevant emerging technologies.

The Fuels Technologies is a separate OFCVT program element that includes Advanced Petroleum Based Fuels line item request of \$3.511 million for the 21CT portion. It has been demonstrated by the National Labs that combustion efficiency of heavy-duty diesel engines can be improved via tailoring certain properties of fuels. In fiscal year 2007, new programs with industry-led teams will attempt to advance this research into the next stage of applied R&D. Therefore, we recommend enhancing the 21CT portion of this line item by an additional \$1 million (Total = \$4.511 million) to enable the investigation of this additional path for improved fuel efficiency.

We take this opportunity to affirm our strong endorsement to the proposed Department of Energy's fiscal year 2007 referenced budget requests with the stated specific enhancements. The trend-setting partnership between the U.S. Government and a key industrial base addresses this country's and world's needs in critical areas of transportation, energy security, economy and environment. The exemplary track record through competitive leveraging of government funding by substantial industry cost share and the emerging high potential results of these partnerships warrant strong congressional endorsement. This affords a unique opportunity for a justifiable and a highly effective return on investment of the U.S. taxpayers' money.

PREPARED STATEMENT OF THE SOUTHERN COMPANY

Mr. Chairman and members of the committee, Southern Company operates the Power Systems Development Facility (PSDF) (<http://psdf.southernco.com>) in Wilsonville, AL for the U.S. Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) and several industrial participants.¹ The PSDF was conceived as the premier advanced coal power generation research and development (R&D) facility in the world. It has fulfilled this expectation. I would like to thank the Senate for its past support of the PSDF and request the committee's continued support. This statement supports the administration's budget request for DOE coal R&D which includes \$25 million for work at the PSDF. These funds are necessary to conduct the future test program agreed to with DOE (see details below) and to support FutureGen—the integrated hydrogen and electric power production and carbon sequestration research initiative proposed by President Bush. DOE has identified the PSDF as one of the primary test centers to support FutureGen through sub-scale component testing. DOE's FutureGen Program Plan submitted to Congress on March 4, 2004 described the transport gasifier (one of the technologies under development at the PSDF) as a promising candidate for inclusion in FutureGen because:

“ . . . its high throughput relative to size, simplicity, and reduced temperature of operation compared with current gasifiers, will yield benefits throughout the FutureGen plant . . . Planned improvements in the coal feed system, particulate

¹ Current PSDF participants include Southern Company, the Electric Power Research Institute (EPRI), KBR, Siemens Power Generation, Inc. (Siemens), Peabody Energy, the Burlington Northern Santa Fe Railway Company, and the Lignite Energy Council. The Lignite Energy Council includes major producers of lignite (who together produce approximately 30 million tons of lignite annually); the Nation's largest commercial coal gasification project; and investor-owned utilities and rural electric cooperatives from a multi-State area that generate electricity from lignite, serving 2 million people in the Upper Midwest region. The Council also has over 250 contractor/supplier members who provide products and services to the plants and mines. In addition to the Wilsonville plant site major work is planned for the PSDF, or components are being developed at the following locations: Grand Forks, ND (sub-scale gasifier testing), Houston, TX (gasifier development); Orlando, FL (gas turbine low-NO_x burner), Pittsburgh, PA (filter fabrication), Deland, FL (filter fabrication), and Holly Springs, MS (gasifier fabrication).

control device, and the char cooling and removal system will significantly increase overall reliability of the transport gasifier, which would further reduce costs. The target is to achieve 95 percent availability rather than the 75 percent-80 percent availability typical of today's gasifiers.

"Because of its simplicity in design and lower temperature of operation, the transport gasifier can potentially reduce the capital cost of an IGCC plant by up to 20 percent (or from \$1,400 to \$1,120/kW) over those employing today's technologies. In addition, the operations and maintenance costs are expected to be lower and availability higher because of the lower temperature of operation."

A key feature of the PSDF is its ability to test new systems at an integrated, semi-commercial scale. Integrated operation allows the effects of system interactions, typically missed in un-integrated pilot-scale testing, to be understood. The semi-commercial scale allows the maintenance, safety, and reliability issues of a technology to be investigated at a cost that is far lower than the cost of commercial-scale testing. Capable of operating at pilot to near-demonstration scales, the PSDF is large enough to produce industrial scale data, yet small enough to be cost-effective and adaptable to a variety of technology research needs.

As a follow-on to the ongoing development of the transport gasifier at the PSDF, Southern Company and the Orlando Utilities Commission (OUC) were recently selected by DOE as part of a competitive solicitation under the Clean Coal Power Initiative (CCPI) to build an advanced 285-megawatt transport gasifier-based coal gasification facility at OUC's Stanton Energy Center in central Florida. The facility will use state-of-the-art emission controls and will showcase the cleanest, most efficient coal-fired power plant technology in the world. The transport gasifier offers a simpler, more robust method for generating power from coal than other available alternatives. It is unique among coal gasification technologies in that it is cost-effective when handling low rank coals (sub-bituminous and lignite) and when using coals with high moisture or high ash content. These coals make up half the proven U.S. and worldwide coal reserves.

Southern Company also supports the goals of the Clean Coal Technology Roadmaps developed by DOE, EPRI, and the Coal Utilization Research Council (CURC). These Roadmaps identify the technical, economic, and environmental performance that advanced clean coal technologies can achieve over the next 20 years. Over this time period coal-fired power generation efficiency can be increased to over 50 percent (compared to the current fleet average of ~32 percent) while producing *de minimis* emissions and developing cost-effective technologies for carbon dioxide (CO₂) management. EPRI recently used the modern financial technique called "Real Options" to estimate the value of advanced coal R&D.² The major conclusion of this study is that the value to U.S. consumers of further coal R&D for the period 2007–2050 is at least \$360 billion and could reach \$1.38 trillion. But, for these benefits to be realized the critically important R&D program outlined in the Clean Coal Technology Roadmap must be conducted.

SUMMARY

The United States has always been a leader in energy research. Adequate funding for fossil energy research and development programs will provide this country with secure and reliable energy while reducing our dependence on foreign energy supplies. Current DOE fossil energy research and development programs for coal, if adequately funded, will assure that a wide range of electric generation and hydrogen production options are available for future needs. Congress faces difficult choices when examining near-term effects on the Federal budget of funding energy research. However, continued support for advanced coal-based energy research is essential to the long-term environmental and economic well-being of the United States. Prior DOE clean coal technology research has already provided the basis for \$100 billion in consumer benefits at a cost of less than \$4 billion. Funding the administration's budget request for DOE coal R&D and long-term support of the Clean Coal Technology Roadmap can lead to additional consumer benefits of between \$360 billion and \$1.38 trillion.

One of the key national assets for achieving these benefits is the PSDF. The fiscal year 2006 funding for the PSDF needs to be \$25 million to support construction of new technologies that are critical to the goals of the Clean Coal Technology Roadmap and to the success of FutureGen. The major accomplishments at the PSDF to date and the future test program planned by DOE and the PSDF's industrial participants are summarized below.

² EPRI Report No. 1006954, "Market-Based Valuation of Coal Generation and Coal R&D in the U.S. Electric Sector", May 2002.

PSDF ACCOMPLISHMENTS

The PSDF has developed testing and technology transfer relationships with over 50 vendors to ensure that test results and improvements developed at the PSDF are incorporated into future plants. Major subsystems tested and some highlights of the test program at the PSDF include:

Transport Reactor.—The transport reactor has been operated successfully on sub-bituminous, bituminous, and lignite coals as a pressurized combustor and as a gasifier in both oxygen- and air-blown modes and has exceeded its primary purpose of generating gases for downstream testing. It is projected to be the lowest capital cost coal-based power generation option, while providing the lowest cost of electricity and excellent environmental performance.

Advanced Particulate Control.—Two advanced particulate removal devices and 28 different filter elements types have been tested to clean the product gases, and material property testing is routinely conducted to assess their suitability under long-term operation. The material requirements have been shared with vendors to aid their filter development programs.

Filter Safe-Guard Device.—To enhance reliability and protect downstream components, “safe-guard” devices that reliably seal off failed filter elements have been successfully developed.

Coal Feed and Fine Ash Removal Subsystems.—The key to successful pressurized gasifier operation is reliable operation of the coal feed system and the filter vessel’s fine ash removal system. Modifications developed at the PSDF and shared with the equipment supplier allow current coal feed equipment to perform in a commercially acceptable manner. An innovative, continuous process has also been designed and successfully tested that reduces capital and maintenance costs and improves the reliability of fine ash removal.

Syngas Cooler.—Syngas cooling is of considerable importance to the gasification industry. Devices to inhibit erosion, made from several different materials, were tested at the inlet of the gas cooler and one ceramic material has been shown to perform well in this application.

Syngas Cleanup.—A syngas cleanup train was constructed and has proven capable of meeting stringent syngas decontamination requirements. This module that provides an ultra clean slip stream is now available for testing a wide variety of technologies.

Sensors and Automation.—Several instrumentation vendors have worked with the PSDF to develop and test their instruments under realistic conditions. Automatic temperature control of the Transport Reactor has been successfully implemented.

Fuel Cell.—Two test campaigns were successfully completed on 0.5 kW solid oxide fuel cells manufactured by Delphi on syngas from the transport gasifier marking the first time that a solid oxide fuel cell has been operated on coal-derived syngas.

Combustion Turbine Burner.—Integrating the existing 3.8 MW combustion turbine with a new syngas burner developed by Siemens has allowed system automation and controls development.

Syngas Recycle.—Added a syngas compressor in order to use syngas instead of air or N₂ for aeration to promote recycle solids flow in the Transport Gasifier and produced a higher heating value syngas that more closely matched commercial operating conditions.

PSDF FUTURE TEST PROGRAM

Future testing at the PSDF is focused on supporting FutureGen and the Technology Roadmaps. These programs aim to eliminate environmental issues that present barriers to the continued use of coal including major reductions in emissions of SO₂, CO₂, NO_x, particulates, and trace elements (including mercury), as well as reductions in solid waste and water consumption. The focus at the PSDF will remain on supporting commercialization of new coal-based advanced energy technologies including those initially developed elsewhere.

Plans for FutureGen recognize that some promising technologies will not be ready initially for installation in the back-bone plant. Therefore, a series of slip-stream installations to test new technologies is also visualized. DOE has identified the PSDF as a key location for support testing of the new technologies prior to inclusion in FutureGen. With adequate funding, work at the PSDF will include:

Transport Gasifier.—Continue transport gasifier development to further optimize performance, explore feedstock flexibility, and provide syngas for testing of downstream systems.

Coarse Ash Handling.—Continue testing of a coarse ash depressurization system, with no moving parts, which has been developed at the PSDF. Like the fine ash

removal system successfully developed earlier, this system reduces capital and maintenance cost and improves reliability.

Advanced Syngas Cleanup.—Test new advanced syngas cleanup systems for reducing hydrogen sulfide, hydrochloric acid, ammonia, and mercury to near-zero levels.

H₂/CO₂ Separation Technologies.—Integrate and test advanced H₂/CO₂ separation technologies to assess their performance on coal-derived syngas.

Syngas Cooler.—Test alternative designs that are less complex, have lower capital cost, and offer better control of the syngas exit temperature.

New Particulate Control Device Internals.—Evaluate alternative filter system internal designs from several vendors.

Improved Fuel Feed Systems.—Evaluate alternatives to conventional lock hopper feed systems that have been identified.

High-Temperature Heat Exchangers.—Test high-temperature heat exchangers as they become available for use in both advanced combustion and gasification technologies.

Fuel Cell.—Install and test a 5 to 10 MW hybrid fuel cell/gas turbine module.

Sensors and Automation.—Evaluate automation enhancements that simulate commercial control strategies. Further development at gasification operating conditions is planned for measuring coal feed rate, temperature, gas analysis, dust at low levels, and hazardous air pollutants.

Water Gas Shift Enhancements.—A variety of water gas shift reactor configurations and sizes can be tested at the PSDF. Optimizing the operation of shift catalysts when exposed to syngas at the PSDF and evaluating their economics will provide valuable input for the FutureGen project.

PREPARED STATEMENT OF THE AMERICAN IRON & STEEL INSTITUTE

The basis for this testimony is to urge Congress to restore funding of the Industrial Technologies Program (ITP) line item for Steel within the Energy Efficiency and Renewable Energy section at the Department of Energy [DOE] to the original level of \$10 million dollars.

The stated goal of the ITP is to reduce the energy intensity of the U.S. industrial sector through coordinated research and development, validation, and dissemination of energy-efficiency technologies and operating practices. The Department of Energy and domestic steelmakers co-fund cutting-edge research that addresses the needs of the Nation and our industry. The goal of these projects is to reduce energy consumption [thereby diminishing the Nation's dependence on foreign sources of oil], lessen environmental impact and increase the competitiveness of domestic manufacturers. Furthermore, what makes the ITP program so unique and appropriate is that only those projects with "dual benefits" [i.e., a public benefit such as reduced emissions or petroleum use, which justifies the DOE investment; and an industry benefit such as a more efficient steelmaking process, which justifies the industry investment] are initiated. It is important to note that Federal funding does not go to steel companies, it is pooled with steel industry funds and awarded to qualified universities, national labs, and private research organizations through a competitive process.

Government involvement and increased funding is crucial to the continuation of this beneficial research. While it is plausible that U.S. steelmakers could conduct similar collaborative research among themselves without DOE funding, the ITP program accelerates technology development by allowing the industry to make great strides in these areas, rather than just steps. Greater energy reduction developments are produced sooner, more environmentally-friendly methods realized today, and domestic steel companies remain at the cutting edge of the global technology race [which assures competitiveness]. Likewise, the steel industry co-funding accelerates achievement of the DOE goals.

In 2003, Congress appropriated \$10 million to fund the Steel component of ITP. Unfortunately, in recent years the program [and the projects it supported] suffered deep budget cuts. This is the case once again, as for fiscal year 2007, the administration requested approximately \$3.5 million.

The decision to under-fund this program is peculiar, considering President Bush—in his State of the Union address—declared that, "Keeping America competitive requires affordable energy. America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology." The President went on to say that, "By applying the talent and technology of America, this country can dramatically improve our environment, move beyond a petroleum-based economy, and make our dependence on Middle Eastern oil a thing of the past." ITP, with its federally-mandated objectives of reducing depend-

ence on foreign oil, lessening environmental impact, and increasing job growth and retention, seems to be the type of program that the President and his administration is seeking. Therefore, as the ITP produces such an outstanding return on the government's and industry's investment, it seems appropriate to restore the program to optimal funding.

An example of one of the major breakthroughs developed through ITP-Steel [which demonstrates the program's ability to satisfy both its public and private objectives] is the advancement of advanced high strength steels or AHSS. Ten ITP projects investing \$6.3 million of Federal and steel industry funding have been focused on AHSS, which permit the design of automobiles that are lightweight [thus greatly reducing fuel consumption and consequently emissions] but also retain all the safety and affordability of basic carbon steel. AHSS are rapidly being adopted by automakers. The following benefits are calculated using a market penetration of only 7 percent of AHSS-type vehicles, a low hurdle given the rapid adoption already evidenced in the new Ford 500 and Chrysler Pacifica:

Item	Savings Per Year	Savings Per Year/Per Federal \$ Spent	\$ Savings Per Year at \$60/Barrel (In millions of dollars)
Barrels of oil	4,071,429	0.84 barrel	\$244.4
CO ₂ emissions reduction (tons)	2,100,000	0.50	(¹)

¹ N.A.

The benefits of ITP-Steel—in terms of savings [large quantities of oil per Federal dollar spent along with large amounts of CO₂ and other emissions for that same Federal dollar]—are evidence that funding cuts to the program were ill-advised and should be reversed.

SUMMARY

The Industrial Technology Program selects projects that have both public and private benefits, justifying the investment of both DOE and industry, and it conducts research at the most qualified facilities in North America with over 80 percent of funding supporting tasks at universities, national labs and technology developers, many of which are small businesses. The ITP Program is a unique and successful program that is not only beneficial to the domestic steel industry; it is beneficial to the Nation as we attempt to curtail our dependence on foreign sources of energy. Please consider restoring ITP-Steel funding to the original level so that its public and private benefits can reach even further into our economy.

PREPARED STATEMENT OF THE US FUEL CELL COUNCIL

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the 120 organizations of the US Fuel Cell Council (USFCC), I want to thank this subcommittee and its predecessors for supporting fuel cell funding over the years. We respectfully ask the subcommittee to continue its leadership in this area by funding the fuel cell and hydrogen programs at the U.S. Department of Energy at \$555 million—the level established in the Energy Policy Act of 2005—for research and development, technology validation, and market transition programs at DoE, through the Offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), Nuclear Energy (NE), and the Science (SC).

This figure represents a \$204 million increase over the administration request. The urgency of our energy challenge, the promise of fuel cells, and the gains achieved to date by our public-private partnership all justify funding these programs at the level authorized by Congress in 2005. The increase we propose represents less than 2 days' worth of imported oil, which costs the Nation more than \$1 billion every week.

Fuel cells are perhaps the ultimate energy generation device. Fuel cells rely on chemistry and not combustion; no fuel is burned. As a result, fuel cells are efficient, exceptionally clean, quiet, scalable and adaptable to virtually every energy need. The fuel for fuel cells can come from an amazing range of sources. Thus, fuel cells offer energy diversity in the short term and ultimately, true energy independence. Congress's support for fuel cell and hydrogen research has brought significant gains in fuel cell cost, performance, and durability. Fuel cells are a family of technologies; members of the family have reached the point of commercialization in some high value markets. By one count, more than 14,000 fuel cells are in operation world-

wide. The pace of development suggests that with additional funding, fuel cells can deliver on their extraordinary promise across a wide spectrum of applications.

Congress acknowledged this in 2005 with passage of the Energy Policy Act. The legislation prescribed additional investment, and a long-term strategy, that include continued research, learning demonstrations and technology validation, and market transition to support early purchases.

Congress approved just such a comprehensive program in EPACT05, because it recognized that accelerating the commercialization of this technology carries extraordinary benefits:

- Reducing our reliance on Middle East oil while moving towards energy independence;
- Improving air quality and combating greenhouse gas emissions; and
- Providing a reliable, efficient, high-quality source of power that decreases dependence on a vulnerable energy infrastructure.

In the first year of EPACT, Congress authorized \$555 million. President Bush's request for fuel cell and hydrogen programs falls far short by about \$204 million.

The President's budget request for low temperature fuel cell and hydrogen programs is in line with his original 5-year, \$1.2 billion commitment, while the request for high temperature fuel cell programs (SECA) is in line with the fiscal year 2006 appropriation. These levels do not fully reflect the will of the Congress in research and development. Worse, from the perspective of an emerging industry, the President and his Department of Energy have chosen not to propose full funding of the programs Congress authorized last year in technology validation and proposed no funding at all for system purchases. We request that Congress correct this error and appropriate funds to the level authorized in the Energy Policy Act of 2005.

Over the past 3 years, shortfalls in fuel cell and hydrogen core program funds have slowed and in some cases stopped high-priority research and development. Full funding can restore program momentum, and give the country some hope that we can break the cycle of energy dependence. Competition for energy supply and security of supply are both urgent concerns, and the Nation's investment, we believe, ought to match that urgency.

By and large, the programs that have been most deeply affected by funding reallocations are non-automotive fuel cell programs. We believe this approach is short-sighted. The path to commercialization is a continuum across all applications. Many fuel cell systems share similar components; as fuel cells move to the marketplace in stationary, portable and micro-applications, they will stimulate cost reduction, energize the supply chain, facilitate infrastructure development and make consumers aware of the technology, its operation and its benefits. All these accomplishments will help us achieve our automotive goals on an accelerated timetable.

Arguably the best way to bring down fuel cell costs is to allow State and Federal agencies to join the ranks of other satisfied early adopters. The Market Transition program is limited in size and scope; but it is a critical path to commercialization. What's more, the Market Transition provision by no means forces Federal and State agencies to make fuel cell purchases; instead, it simply provides a financial mechanism for acquisition where fuel cells fill an agency's need. The legislation establishes the market transition program with a first year authorization of \$20 million.

Finally, we recognize that this subcommittee has a Constitutional obligation to review and modify the budget as you understand the Nation's energy development priorities. The fuel cell and hydrogen programs are programs of national purpose. They benefit from a centrally coordinated effort, openly conducted and competitively bid. Indeed, this committee has instructed that it be so. This approach assures accountability and reduces duplication and waste. Congressionally-directed programs have become an important part of the overall investment in fuel cells and hydrogen. Ideally, these congressionally-directed projects would be additive to the core DoE program, or in a fiscally constrained environment, closely track program priorities and development timetables.

There is growing support for ethanol and other biofuels, and for hybrid vehicles as responses to our energy challenge. These programs would not, by themselves, solve our problem. They would, however buy us time to make the transition to hydrogen. The best news is that they are also fully consistent with a hydrogen future and would facilitate the transition. But it would be short-sighted to reduce our investment in the long-term solution. The public/private partnership in fuel cells is working; full funding will continue this progress, and bring closer the transition to a secure, environmentally clean, low-carbon energy future.

Thank you for considering our requests.

PREPARED STATEMENT OF THE GEOTHERMAL ENERGY ASSOCIATION

On behalf of the members of the Geothermal Energy Association, we urge the subcommittee on Energy and Water Appropriations to support restoration of funding in fiscal year 2007 for the U.S. Department of Energy's (DOE) Geothermal Energy Research Program. Continued geothermal research by the Department of Energy is urgently needed and clearly justified.

The National Research Council's review of the DOE renewable energy programs found that the geothermal research program was undervalued (Renewable Power Pathways, 2000). According to that report, the resource has significant potential to contribute to our Nation's energy needs. It states, "Many analysts believe that a substantial fraction of U.S. baseload power could potentially be supplied by a variety of geothermal resources."

The Geothermal Task Force Report prepared for the Western Governors' Association's Clean and Diversified Energy Advisory Committee (CEAC) has recently made similar recommendations. The Task Force's January, 2006 Report recommends that "geothermal research by the U.S. Department of Energy should be increased, particularly into technologies that can reduce risk, reduce costs, or expand the accessible resource base."

Today, some 25 States use geothermal resources for power or direct use purposes, but they are tapping only a small fraction of the potential. For example, there is 2,800 MW of geothermal power in use in the United States today, but the U.S. Geological Survey (USGS), in its Circular 790, estimated a hydrothermal resource base of between 95,000 and 150,000 MW! Further, this estimate does not include the full range of geothermal resources, nor does it assess what could be possible with advances in engineered geothermal systems or other technological breakthroughs.

GEA projects that with continued Federal and State support geothermal power could expand beyond providing 5 percent of California's electric power to providing 6 percent of the entire Nation's electric power by 2025. (See Chart 1). We estimate that over 30,000 MW of geothermal power could be developed in the next 20 years, representing an investment in new domestic energy supplies of over \$70 billion. This level of production and new investment in geothermal energy would mean 130,000 new full-time jobs and 500,000 person-years of construction and manufacturing employment. Yet, at this level of geothermal production, we would only be utilizing a small fraction of the ultimate geothermal potential.

CHART 1.—PROJECTED GEOTHERMAL POWER PRODUCTION BY 2025

Resource	Power Capacity (MW)	Percent of Resource Potential
Hydrothermal	16,825	~10–15
Oil Well co-prod	6,000	<5
Geopressed	1,000	<1
Distributed Gen	500	<1
EGS	4,000	<1
Power Subtotal	28,325	<1
Direct Use	¹ 2,400	<5
Total Geothermal	30,725	<1

¹ Equivalent.

The benefits of achieving this would be substantial. This power capacity would produce 240,976 GWhrs of electricity annually¹ and add important reliability to the system. This generation is roughly equal to 100 percent of the electricity generated in California, Nevada and Idaho combined in 2004.

Achieving this potential would provide millions of consumers reliable, cost-effective power at stable prices. Also, this amount of electricity could displace as much as one-third of the natural gas currently used in power production, benefiting consumers by relieving pressure on spiraling natural gas prices.

However, while State renewable laws and Federal tax incentives will propel the expanded use of geothermal energy, this level of production in 2025 will not be achieved without DOE program support. We estimate that of the projected 30,000 MW one-half is highly dependent upon continued research and technological devel-

¹ Power production assumes 95 percent availability, direct use equivalent at 50 percent.

opment supported through DOE's program. The loss of DOE's program would be a major setback to both the pace and extent to which we can expand our use of this important renewable energy resource.

The Federal Government has made a significant investment in developing a laboratory and university research community that is leading the world in developing the technologies needed to utilize this vast resource. This is not the time to abandon this effort. The budget's short-sighted proposal to close out the geothermal research program would significantly set-back progress towards national energy goals and jeopardize new technology development for decades.

Therefore, we urge the Energy and Water Appropriations Subcommittee to continue supporting DOE's Geothermal Research Program in fiscal year 2007 and, specifically, to appropriate \$32.5 million for the programs defined in more detail in this statement.

BACKGROUND ON GEOTHERMAL ENERGY

While only a small fraction of the geothermal resource base is utilized today, it already provides significant energy for our Nation. The United States, as the world's largest producer of geothermal electricity, generates an average of 16 billion kilowatt hours of energy per year—more than wind and solar combined. Geothermal power provides more than half of all renewable electricity used in California, about 9 percent of northern Nevada's electricity, and about 25 percent of the island of Hawaii's electricity. Farms, spas, businesses and schools in over 24 States utilize geothermal resources as an energy source.

The energy, environmental, and economic benefits of geothermal are substantial. Geothermal electricity produces 11,500 full-time jobs annually, not including the hundreds of jobs created by direct use applications. The United States' current geothermal generation is equivalent to burning close to 25 million barrels of oil or 6 million short tons of coal per year. Geothermal electricity displaces the emissions of 16 million tons of carbon dioxide, 78 thousand tons of sulfur dioxide, 32 thousand tons of nitrogen oxides, and 17 thousand tons of particulate matter every year, compared with production of the same amount of electricity from a state-of-the-art coal-fired plants.

With continued Federal and State support, much more geothermal generation is possible. The U.S. Geological Survey (USGS), in its Circular 790, reported that the geothermal resource base was vast, involving hundreds of thousands of megawatts. But, much of this resource is hidden, and we do not have commercially available exploration technologies that can effectively identify geothermal reservoirs without drilling. But, drilling is expansive and risky, and often involves permitting and other obstacles.

Continued improvements and the development of new technologies to identify, develop and produce energy from geothermal resources is critical if most of the very large resource base is ever to become economically feasible to use. This includes developing the techniques necessary for engineering geothermal systems that could some day allow so-called hot dry rock power production. Beyond hydrothermal resources, there is significant new geothermal production potential from co-production in oil and gas fields, geopressured gas resources in Texas and Louisiana, and distributed power generation. Notably, both oil field and geopressured production have significant potential to expand U.S. oil and natural gas production. All of these efforts need support through DOE's program and are at a critical point in their development.

Beyond electric power generation, expanding the direct use of geothermal resources by businesses, farms, and communities needs to be addressed more vigorously in DOE's programmatic efforts. Expanded direct use geothermal has widespread application across the Nation, and would largely displace fuels used for heating and industrial and commercial processes. By displacing fossil fuels, developing the technologies and techniques to expand direct use would have a direct, positive impact on national security.

Utility scale power production under the 2025 projection above would expand geothermal generation beyond four States today (California, Nevada, Utah and Hawaii) to also include Alaska, Wyoming, Idaho, Oregon, Washington, Alaska, Arizona, Colorado, New Mexico, Texas and Louisiana. In addition, distributed generation and expanded direct use of geothermal resources could provide new energy in a larger number of States including: Alabama, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Illinois, Kansas, Louisiana, Mississippi, Montana, Nebraska, Nevada, North Dakota, New Mexico, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, West Virginia, and Wyoming.

FISCAL YEAR 2007 RECOMMENDATION

We agree with the January 2006 WGA Geothermal Task Force Report. It recommends: “a strong, continuing geothermal research effort at the Department of Energy that addresses the full range of technical problems encountered in achieving full production from the identified and undiscovered resources in the West.” The report also supports “. . . continuation of advanced technology programs and outreach through GeoPowering the West.” In addition, the report urges DOE to expand its program in critical areas “particularly the identification and development of new resources” and “support for exploration and exploratory drilling.” Finally, it asks DOE to “examine whether existing Federal loan guarantee authority in law can be used to supplement these activities to reduce risk and encourage development of new resource areas.” (<http://www.westgov.org/wga/initiatives/cdeac/geothermal.htm>.)

Consistent with the Energy Policy Act of 2005’s recommendation that “The Secretary shall conduct a program of research, development, demonstration, and commercial application for geothermal energy . . .” for fiscal year 2007 we recommend that Congress appropriate \$32.5 million for DOE’s geothermal program. Of this amount:

- \$8.5 million should support work by the Intermountain West Geothermal Consortium (IWGC), which was authorized by the Energy Policy Act of 2005 to support national energy security through research into and development of underutilized geothermal resources in cooperation with industry. Partner institutions include Boise State University, University of Idaho, Idaho National Laboratories, GeoHeat Center at Oregon Institute of Technology, Desert Research Institute with the Nevada System of Higher Education, and the Energy and Geosciences Institute at the University of Utah.
- \$2 million should support the continuing work of the University of Nevada’s Great Basin Center for Geothermal Energy, which is critical to developing the very substantial and untapped resources of the Great Basin. UNR has been doing pioneering work in expanding our knowledge of the Great Basin resource while advancing both science and near-term development possibilities through its work and collaboration with industry.
- \$4 million should support the work of Sandia National Laboratories (SNL) to develop advanced technologies for drilling and related research that will reduce the cost and risk of exploration and new projects. Drilling cheaper, smarter, and with less impact is a critical component of identifying and making expanded use of the geothermal resource economically feasible.
- \$4 million should support cost-shared, exploratory drilling consistent with OMB’s cost-sharing guidelines. This program should be coordinated with the USGS to support their efforts to produce a new national geothermal resource assessment. These funds could alternatively be used to support a targeted loan guarantee program as recommended to DOE by Sentech in its March 2005 report.
- \$4 million should support local information, outreach, and project development efforts through the State working groups of DOE’s GeoPowering the West (GPW) initiative. GPW has active State working groups in Alaska, Arizona, California, Hawaii, Idaho, Oregon, Nevada, New Mexico, Texas, Utah, and Washington, and is working in Colorado, Montana, South Dakota and Wyoming. This award-winning program is recognized as essential to expanding geothermal usage.
- \$10 million should be designated for other activities administered by the Department of Energy, including peer-reviewed, partnered, and cost-shared industry-applied research; and, longer-range research including DOE’s Enhanced Geothermal Systems (EGS) research effort designed to develop advanced technology capable of tapping the virtually limitless heat content of the Earth.

FUTURE BENEFITS

For the Nation, the return on the investment in new geothermal technology would be substantial. As the WGA Geothermal Task Force recently reported, “With sustained support from the Department of Energy, Geothermal power can be a major contributor to the power infrastructure and economic well-being of the Western States.”

The U.S. Department of Energy’s Geothermal R&D program benefits the entire U.S. economy. Research shows that for every million dollars invested in geothermal energy, \$2.5 million will return to the United States economy. The program’s success can turn the thousands of megawatts of untapped geothermal potential into a clean, reliable, sustainable, indigenous, distributed electricity source; produce thou-

sands of new direct-use applications serving communities, farms and businesses; and spur other beneficial uses of the natural heat of the earth.

Finally, achieving the level of production possible by 2025 would have substantial environmental benefits. Compared to state-of-the-art coal plants, this would annually offset 266 million tons of carbon dioxide emissions. This is equal to the annual CO₂ emissions from 41 million automobiles—30 percent of all automobiles in use in 2003 according to the Department of Transportation. Or, in an international perspective, emissions avoided by geothermal generation in 2025 would represent more than the combined total CO₂ emissions from Austria, Hungary, Iceland, Ireland, Lithuania, New Zealand, Sweden, and Switzerland in 2002.

OMB'S JUSTIFICATION

With a highly selective reading of the Energy Policy Act of 2005 (EPAc), the Office of Management and Budget appears to justify its proposal to terminate the DOE Geothermal Research program on the fact that Congress included important provisions in this legislation to stimulate new geothermal development. EPAc included important tax incentives for new geothermal plants, an extensive revision of the Geothermal Steam Act, and directives for an expanded DOE renewable research program that specifically includes geothermal energy. OMB ignores the devastating impact that terminating the geothermal program would have on the potential contribution of this industry to national energy needs and its international competitiveness. Further, their justifications do not appear to be based upon metrics that are applied consistently across technologies, nor do they appear to be based upon documented and objective analysis. Quite simply, it's difficult to argue with their analysis, when there doesn't appear to be any. Both the process and results of their decision making are a mystery.

Thank you for considering the views of the Geothermal Energy Association. Please feel free to contact us if you have any questions or need additional information about recommendations made in this statement.

PREPARED STATEMENT OF THE AMERICAN FOREST & PAPER ASSOCIATION

The Agenda 2020 Technology Alliance, a Special Project of the American Forest & Paper Association (AF&PA) welcomes this opportunity to thank the committee for its fiscal year 2006 support in providing sustained funding to our industry's key public-private partnerships within the Office of Energy Efficiency and Renewable Energy (EERE) and to urge increased funding to adequately address industry's challenges in fiscal year 2007. The Industrial Technologies Program (ITP) and the Office of Biomass Programs (OBP) provide vital funding for research, development, and demonstration (RD&D) of technologies that dramatically reduce the forest products industry's energy intensity and transforms our industry into producers of carbon-neutral biofuels—thus addressing strategic national needs associated with energy efficiency, energy security, diversified energy supply, and environmental performance. We strongly recommend funding of \$6 million for forest products industry in ITP. We support the President's request for \$150 million for Biomass and Biorefinery Systems R&D in OBP and ask that the committee work to ensure eligibility of forest biorefineries in these programs and keep the appropriations unencumbered to allow for full funding of competitive biorefinery RD&D grants. Furthermore, we recommend that the committee restore OBP funding of \$10 million for competitive R&D for black liquor gasification, a key enabling technology of the forest biorefinery.

The Agenda 2020 Technology Alliance is an industry-led partnership with government and academia that holds the promise of reinventing the forest products industry through innovation in processes, materials and markets. The collaborative, pre-competitive research, development, and deployment supported through Agenda 2020 provide the foundation for new technology-driven business models that will enable our industry to meet competitive challenges, while also contributing solutions to strategic national needs. The technology solutions developed through Agenda 2020 are aligned to provide solutions to the competitive challenges faced by the U.S. forest products industry, which accounts for approximately 7 percent of total U.S. manufacturing output, employs 1.3 million people, and ranks among the top 10 manufacturing employers in 42 States with an estimated payroll of \$60 billion.

As is the case with many U.S. manufacturing industries, we face serious domestic and international challenges. Since 1997, 101 pulp and paper mills have closed in the United States, resulting in a loss of 70,000 jobs, or 32 percent of our workforce. An additional 67,000 jobs have been lost in the wood products industry since 1997. New capacity growth is now taking place in other countries, where forestry, labor,

and environmental practices may not be as responsible as those in the United States. In addition, globalization, aging process infrastructure, few technology breakthroughs, as well as recent financial performance and environmental concerns, hinder the ability of U.S. companies to make new investments. The volatility of energy markets, especially for natural gas, has made our competitive position even more precarious and heightened the need to develop new energy efficient technology. Each year without new investments, new technologies and new revenue streams, we lose ground to our overseas competitors.

Currently, energy is the third-largest manufacturing cost for the forest and paper industry at 18 percent for pulp and paper mills—up from 12 percent just 3 years ago. For some of our mills, the cost of energy is about to eclipse employee compensation.

Since 1994, the forest products industry has been one of DOE's "Industries of the Future," partnering with ITP through the Agenda 2020 Technology Alliance in RD&D that has yielded successful advances towards our national energy and environmental goals. Agenda 2020 stands as an example of successful industry-government collaboration to develop technologies that hold the promise of reinventing industry, while providing real solutions for strategic national energy needs. Every Federal \$1 spent on ITP saves \$7.06 in annual energy costs and 1.3 million in annual source BTUs (2004 estimates). As recently as 2003, the ITP/Agenda 2020 portfolio included a total shared DOE and industry investment of almost \$48 million, with nearly 55 percent coming from direct project cost shares by industry.

Today, after 5 years of continuous and substantial cuts, the ITP/Agenda 2020 budget has been reduced by over 65 percent since fiscal year 2002. This undermines our progress in achieving crucial energy efficiencies at a time when energy is a major factor in the survival of the U.S. forest products industry. Projects re-scoped or cut in fiscal year 2005 due to budget shortfalls resulted in a lost energy savings potential of 5 trillion BTUs/yr. With substantially less funding in fiscal year 2006, we will be unable to pursue projects in key priority areas such as advanced water removal and high efficiency pulping, which represents a lost savings potential of 100–200 trillion BTUs/yr. A further reduction is proposed in fiscal year 2007 (\$2.878 million), barely sufficient for only one collaborative project and 1 or 2 concept studies. By comparison, in the early 2000's, the portfolio included nearly 40 collaborative research projects across the country with varying sizes and scopes, but with a common goal of developing breakthrough technologies and processes that produce dramatic improvements in energy efficiency in an environmentally-sound manner.

This comes at a crucial time when the forest products industry, like many energy-intensive industries, is facing unprecedented pressures due to the rising costs of energy and seeking solution as diverse as fuel switching, finding new energy sources, and developing options for reducing energy consumption. Although we are nearly 60 percent self-sufficient (using biomass), the volatility of natural gas prices has translated into an additional cost to the industry of more than \$2 billion annually—and places us at a significant disadvantage compared with our international competitors. Thus we are in greater need than ever for the technology-based energy efficiency solutions that could be provided through our Agenda 2020 partnership with ITP. The AF&PA's recommended ITP funding for forest products research (\$6 million) would help our industry partially recover its capacity to develop and deploy vital energy efficiency technologies. Restoring Agenda 2020 funding to pre-fiscal year 2005 levels will not only help the competitive position of American industry, but will also serve national strategic goals for reduced dependence on foreign oil.

The Integrated Forest Products Biorefinery (IFPB) is a key Agenda 2020 technology platform and a top technical and economic priority for our industry. The objective is to develop and deploy core technologies that can be integrated into existing processing infrastructure, which would be transformed into geographically distributed production centers of renewable "green" bioenergy and bioproducts. This can be done while co-producing existing product lines, creating higher skilled and better paying jobs, strengthening rural communities, and opening new domestic and international markets for U.S. forest products companies.

The IFPB technology has the potential to integrate agricultural wastes, agricultural producers, forest landowners, agricultural landowners, forest product producers, and the petrochemical industry to produce clean renewable bio-fuels to support our local economies and the Nation. Widespread application of this technology would not only reduce environmental impact of burning fossil fuels, it would also increase the viability of agricultural, forest products, and other industries that use waste heat. It will create new high paying jobs, both direct and indirect, increasing tax revenue. From an energy perspective, the IFPB has the benefit of making the forest products industry even more energy self-sufficient, serving the DOE strategic goal of reduced energy intensity in industry by reducing fossil energy consumption.

In addition, the IFPB would permit the industry to become a producer of renewable, carbon-positive bioenergy and biofuels, contributing to DOE strategic goals to dramatically reduce dependence on foreign oil and to create new domestic bioindustry.

AF&PA supports the President's announced \$150 million budget initiative in fiscal year 2007 for biorefinery research and demonstration. This initiative provides much needed funding to advance core enabling IFPB technologies, as well as providing major capital cost-share for commercial scale biorefinery demonstration. The forest products industry is an ideal partner to develop and commercialize integrated biorefineries. We have much of the infrastructure and expertise—wood harvesting, transportation and storage, manufacturing and conversion infrastructure, waste handling and recovery—needed to achieve the goals of integrated biorefineries. By and large, they are located in rural communities where they can help realize important synergies between agricultural and forest-based feedstocks.

Our industry currently is poised to field several projects to advance key IFPB technologies for biofuel production, and even demonstrate biorefineries at the commercial scale. In order to achieve the promise of IFPB technologies for the industry and for the Nation, we need greater stability and availability of funds provided through the OBP budget. The trend of increasing OBP earmarks, over 50 percent of the fiscal year 2006 appropriation, has contributed to a marked reduction in real availability of funds for biorefinery RD&D. We urge the committee to preserve and leave unencumbered the proposed \$150 million funding of Biomass and Biorefinery Systems R&D, so that there will be sufficient appropriations to fund FOA No. DE-PS36-06GO96016, the recently released solicitation for biorefinery demonstration and commercialization. We also urge the committee to ensure that forest-based materials are eligible for this and future biorefinery research and demonstration funding. Forest-based materials can sustainably produce enough biofuels to displace up to 10 percent of the country's petroleum production. They are a vital feedstock for achieving reduced dependence on foreign oil and facilitating bioindustries domestically and should be included in programs for biomass and biorefinery RD&D.

A core enabling technology for part of the IFPB is black liquor gasification (BLG), which converts the by-product of the chemical pulping process into a synthetic gas. The synthetic gas can subsequently be burned to directly produce clean, efficient energy, or converted to other fuels such as hydrogen, renewable transportation fuels, and/or other high value chemicals. If fully developed and commercialized, BLG has the potential to produce a net 22 gigawatts of power, displacing as much as 100 million barrels of oil per year. This translates into displacement of 900 BCF of natural gas consumption for power generation by the year 2020, assuming that BLG is placed in service by 2010.

In fiscal year 2006, DOE eliminated funding for BLG and related research, despite recent technical progress to bring the technology to pre-commercial demonstration. BLG is a core enabling technology for the IFPB, and is identified as a priority technology area for biorefineries in technology roadmaps created by industry, as well as in research plans developed by OBP to accelerate biorefineries and development of national bioindustry. Critical research areas identified by OBP include: integrated biorefinery support for thermochemical biorefineries, products core R&D in chemicals and fuels from syngas; thermochemical platform core R&D in BLG and syngas cleanup. AF&PA is recommending that \$10 million be restored in the OBP budget for competitive research in these critical areas and to complete BLG core research and projects that were eliminated in recent cuts. This funding will provide the groundwork needed for next vital steps leading to large-scale demonstration of biofuels and biochemicals production in association with the industry's dominant Kraft pulping process.

We appreciate the committee's interest in ensuring sustained and adequate funding for RD&D partnerships and look forward to working with you to advance industry and national interests.

PREPARED STATEMENT OF GEO-ENERGY PARTNERS

EXECUTIVE SUMMARY

Eliminating the DOE geothermal budget will have a serious, negative effect on developing America's premier renewable energy resource. The DOE/GRED cost-sharing program, in particular, has provided a great incentive for small independents to undertake exploration activities that otherwise would be beyond their financial reach. If development of geothermal resources is to be significantly expanded in the future, exploration for yet unproven resources will be required. The DOE/GRED cost-sharing program is essential if these exploration activities are to continue.

BACKGROUND

During the 1960's and continuing into the early 1980's the U.S. geothermal industry flourished, with major petroleum and mining firms in addition to numerous independent geothermal companies scouring the western United States for geothermal resources. During that period, nearly all of the currently existing geothermal electrical production was constructed.

Since then, geothermal exploration has essentially been non-existent and the geothermal industry is currently dominated by four large corporations (Calpine, Ormat, Caithness and CalEnergy). Except for CalEnergy's discovery and development of the Coso, California geothermal resource in the 1980's, these companies have only purchased already-explored/discovered operating facilities, focused on increasing the efficiency of their own operating plants or expanded already-proven fields. These four companies no longer conduct grass roots exploration. However, without exploration, always largely by independents (and solely by independents now), not a single one of the currently producing geothermal fields in the western United States would have come into existence. Exploration and discovery of new geothermal resources is solely in the hands of small independent geothermal enterprises. Fortunately the "independents" are primarily comprised of experienced geothermal professionals who have been in the industry since the boom days of the 1960's, 1970's and 1980's.

The U.S. geothermal industry is in desperate need of a new wave of exploration and discovery to respond to the current burgeoning demand and growing need for secure, domestic renewable energy resources. It is a sad fact that not since 1992 has a new geothermal field been brought on-line for power production in the United States: Brady's Hot Springs in Nevada. Since then all additions to U.S. geothermal capacity has been accomplished through incremental expansions in already-developed fields. The last new field brought on line in California was Honey Lake in 1989; in Utah the last was the Cove Fort geothermal plant in 1985; and in Hawaii it was Puna in 1984.

Geothermal energy is the only true base-load renewable energy source and has a decades-long track record of being on-line over 95 percent of the time using proven, dependable technology. Wind and solar are wonderful technologies, however, they only produce power when the wind blows or the sun shines. Electrical generation from a geothermal plant is 24/7/365.

The DOE Geothermal Resource Exploration and Definition program ("GRED") has provided funding to encourage exactly the type of exploration necessary to promote the discovery of new geothermal resources for the next wave of geothermal development. GRED I in 2000, GRED II in 2002 and the ongoing GRED III programs have encouraged exploration in previously unexplored areas and has already resulted in the identification of over 80 MW of new geothermal resources. More GRED III drilling will take place this summer at our Emigrant leasehold. The Emigrant Slimhole Drilling Project is an 80 percent DOE/20 percent Esmeralda Energy Company ("EEC") cost-shared exploration slimhole. EEC is negotiating for a power purchase agreement ("PPA") for Emigrant and recently signed such a PPA with San Diego Gas & Electric for our Truckhaven lease applications in Imperial County, California.

The experienced independents are the only ones in the geothermal industry willing and capable of making the next wave of geothermal development a reality. However, initial exploration efforts are costly and have a high degree of risk. DOE geothermal funding has historically been minimal but it remains a critical element in developing untapped geothermal resources. Eliminating the DOE geothermal budget, in particular the DOE GRED program, will have a serious, negative effect on developing America's premier renewable energy resource.

PREPARED STATEMENT OF THE AMERICAN GAS ASSOCIATION

Mr. Chairman and members of the subcommittee, the American Gas Association (AGA) represents 197 natural gas distribution utilities that serve more than 56 million homes and businesses in all 50 States. We appreciate the opportunity to assist you with consideration of the U.S. Department of Energy's (DOE) fiscal year 2007 budget request.

Natural gas meets one-fourth of U.S. energy needs. Almost all of this natural gas is produced in the United States or Canada, making natural gas a vital, clean, and domestic form of energy. Local natural gas utilities deliver natural gas through more than 1 million miles of underground pipelines. The terrorist acts of September 11, 2001 and the war with Iraq have made clear the need for continued investment in U.S. energy infrastructure, both to facilitate greater reliance on domestic energy resources and to ensure reliable delivery. Energy is the lifeblood of the U.S. economy, and innovative technologies such as distributed energy will help ensure a reli-

able and efficient supply of electricity—even if a central power station or the electric grid were to be compromised.

AGA continues to support DOE research programs such as natural gas vehicles and industrial research and development (R&D). AGA wishes, however, to outline three top priorities of particular benefit to natural gas consumers and the utilities that serve them:

- The Office of Fossil Energy's Natural Gas Infrastructure Technology research program for which AGA urges Congress to appropriate \$15 million.
- The Office of Fossil Energy's Gas Storage Technology Consortium (GSTC) for which AGA urges Congress to appropriate \$2.0 million.
- The Office of Fossil Energy's Natural Gas Exploration, Production and Hydrates research programs.

OFFICE OF FOSSIL ENERGY: NATURAL GAS INFRASTRUCTURE

At present the natural gas industry operates more than 1 million miles of underground pipe of varying sizes. The industry and DOE estimate that \$19 billion of investment will be needed over time to replace this infrastructure in the ordinary course. Additionally, due to projected new natural gas demand (increasing by 40 percent by 2025), another \$42 billion will be needed in the coming years for expansion of the natural gas delivery system.

AGA strongly supports DOE's natural gas industry Infrastructure and Operations program, which was established in fiscal year 2001 with an initial appropriation of \$4.9 million. The goal of the program goal is to make mid- to long-term investments in improving the reliability and efficiency of the Nation's natural gas infrastructure. Projects funded by DOE include development of more corrosion-resistant material that can transport gas at higher pressure, fuel-efficient compressors capable of flexible operation, technologies to detect and assess corrosion and mechanical damage, improved automated data acquisition, system monitoring and control techniques, no-dig technologies, innovative excavation and restoration systems, and plastic pipe technology. This research has played a critical role in assuring that the Nation's energy supply reaches consumers.

Natural gas industry response to this program has been enthusiastic, as evidenced by the submission of more than 100 cost-sharing proposals by industry partners in the first year alone. These early proposals, totaling more than \$75 million, exceeded the available dollars by a 9-to-1 factor.

In fiscal year 2005, Congress appropriated \$8.47 million for this program but eliminated this funding in fiscal year 2006. DOE's natural gas infrastructure and operations program is the only Federal program focused on mid- to long-term natural gas pipeline research. Without this vital research, many technologies needed to increase the deliverability and reliability of the existing pipeline network will not come to fruition.

Given the importance of expanding the Nation's natural gas infrastructure in anticipation of significantly growing demand for natural gas, the American Gas Association requests that Congress appropriate \$15 million for the DOE's Fossil Energy natural gas infrastructure research program in fiscal year 2006.

The natural gas industry provides substantial cost sharing in developing the technologies necessary for this new infrastructure. Major and novel system improvements are needed for natural gas to be delivered in the volumes that DOE believes will be required in the future. These improvements depend on new, highly efficient technologies.

DOE'S GAS STORAGE TECHNOLOGY CONSORTIUM (GSTC)

The mission of the DOE Gas Storage Technology Consortium is to assist in the development, demonstration and commercialization of technologies to improve the integrity, flexibility, deliverability, and cost-effectiveness of the Nation's underground natural gas/hydrocarbon storage facilities. The Consortium is on target to deliver technology advancements to industry and has co-funded 18 projects totaling \$2.567 million Federal dollars. Projects can be categorized under two major headings: (1) Integrity—which function to improve safety and reliability of the underground storage operations; (2) Deliverability Enhancement—which focus on identifying ways to increase existing storage capacity and deliverability.

The American Gas Association actively supports the DOE Gas Storage Technology Consortium and requests Congress to provide \$2.0 million for natural gas storage in fiscal year 2007.

THE OFFICE OF FOSSIL ENERGY'S NATURAL GAS EXPLORATION, PRODUCTION AND
HYDRATES RESEARCH

Research investment is a key tool for producing more gas from marginal wells that would otherwise be shut-in prematurely now and for producing more gas in the future from very long-term, high-risk, but potentially promising frontier areas such as methane hydrates.

The DOE Exploration and Production research program is aimed directly at small producers working on high-risk deep drilling operations and stripper wells and marginal wells in Appalachia. Technological advances in these areas are conveyed to small gas producers through the Multi-Lab/Industry Partnership and the technology transfer program.

AGA supports continued funding for the DOE Exploration and Production research program.

CONCLUSION

Mr. Chairman, AGA is giving great emphasis to developing comprehensive programs that enhance economic and national security, provide cheaper energy to the end-user, reduce emissions, and improve energy efficiency. AGA greatly appreciates your past support and consideration of these proposals.

PREPARED STATEMENT OF AUSTIN ENERGY

This testimony supports funding for development and deployment of plug-in hybrid vehicles (PHEVs) within the Department of Energy's fiscal year 2007 budget request. Specifically, Austin Energy supports: (1) \$10 million for Section 706 of the Energy Policy Act of 2005 ("EPACT")—Joint Flexible Fuel/Hybrid Commercialization Initiative; (2) \$15 million for Sections 711/911 of EPACT—Hybrid Vehicles for system and component development for plug-in hybrid vehicles; and (3) \$2.5 million for Title 8 of EPACT—Advanced Vehicles for a fuel cell vehicle developed with a plug-in hybrid drive platform. Funding of \$27.5 million within these three areas should be included within the Hybrid and Electric Propulsion section of the Vehicle Technologies Program of the Energy Efficiency and Renewable Energy budget.

Austin Energy, the Nation's 10th largest community-owned electric utility, serves 360,000 customers within the City of Austin, Travis and Williamson Counties, Texas. Austin provides electricity to the capital city of Texas through a diverse generation mix of nuclear, coal, natural gas and renewable resources. Austin Energy has been nationally recognized for its Green Choice renewable electricity program. Austin sells more renewable electricity, primarily wind, than any other utility in the country.

Austin Energy has also been a national leader in energy efficiency. Austin's Green Building program for both commercial and residential buildings has been a national model for use of sustainable building technologies.

As the President remarked in his State of the Union Address, and repeated again this week, the United States needs to break its addiction to imported supplies of petroleum. The principle use of imported petroleum is to produce gasoline to power the transportation sector, particularly automobiles. With \$3.00 gasoline the American public is ready to embrace new technology. Congress and the DOE can move forward to help right now. Already popular hybrid vehicles demonstrate that there is now a technologically feasible way to power automobiles with both an internal combustion and an electric engine. The plug-in hybrid vehicle is a modification of current hybrids. Plug-in hybrids can be charged from the existing electrical grid by plugging the car into an ordinary wall socket while the internal combustion engine can be a flexible fuel engine that will run on domestically produced biofuels.

PHEVs will run on a dedicated electric charge for a number of miles (20–60 depending on the size of the battery pack) then shift to liquid fuel.

PHEVs have the ability to significantly increase mileage over both conventional cars and existing hybrids. Instead of the constant switching between gasoline and electric power as is done in a hybrid today, the PHEV runs on electric power until the batteries are drained, only then does the fuel engine engage to power the car. If the driver's daily commute is within the electric range (20–60 miles), or if driving is within a small geographical area (city delivery trucks), then gasoline consumption is minimized thus starting us down the road to reduced imports.

Austin Energy is convinced that PHEVs will be a significant contributor to reducing our Nation's reliance on imported oil. Unlike other transportation alternatives, PHEVs require neither new fueling infrastructure nor driver behavioral changes. The infrastructure for PHEVs, standard electric sockets, already exists and Ameri-

cans have already become accustomed to plugging-in Blackberries, cell-phones and lap-top computers. In the instance that one forgets or is unable to plug-in the car, it will run as usual on gasoline or flexible fuel.

The funding initiatives recommended by the President in the DOE fiscal year 2007 budget submission will speed the day when PHEVs are widely available to American citizens. Other DOE programs support plug-in hybrid technology developed as part of flexible fueling operations for cars as well as integrated within the advanced fuel cell vehicle. PHEV technology will complement any existing automobile fueling system or one envisioned for the future. The DOE budget submission will provide for deployment of PHEVs in demonstration activities to allow for different commercial applications of the vehicles. PHEV technology is adaptable to all vehicle platforms—from large trucks to commuter cars.

Austin Energy supports Congressional appropriations to increase the availability of PHEVs and demonstrate its capacity as a solution to our “oil addiction.” Austin Energy is also willing to support the Federal effort by overseeing a national grass-roots campaign to demonstrate the consumer market for PHEVs.

Austin Energy’s “Plug-In Partners” is an initiative to demonstrate to the automobile manufacturers that a consumer market already exists for PHEVs. Utility rebates and incentives, State, county and municipal government endorsements, and citizen petitions are evidence of an expanding interest in PHEVs. A key aspect of the Plug-In Partners campaign is the “soft” fleet orders. Fleet owners, both private and governmental, sign a pledge to strongly consider purchasing a certain number of PHEVs when available from an original equipment manufacturer. While the fleet owner understands that the cars are not presently on line, the belief in the concept of a PHEV is sufficient for them to make the soft fleet order. This helps demonstrate a market to automakers. A number of such orders have been obtained.

Austin Energy’s Plug-In Partners campaign was announced nationally on January 24, 2006 at the National Press Club in Washington, DC. Senator Orrin Hatch of Utah spoke of the importance of PHEVs to ending our reliance on foreign oil. On behalf of Governor Pataki of New York, Charles Fox, Deputy Secretary for Energy & Environment offered support for the campaign. The Plug-In Partners campaign has been joined by the cities of Austin, Baltimore, Boston, Dallas, Denver, Kansas City, Los Angeles, Oakland, Philadelphia, Phoenix, Salt Lake, San Francisco and Seattle. The New York State Energy & Research Development Authority (NYSERDA), American Corn Growers Association, Soybean Producers of America, Alliance To Save Energy, American Council on Renewable Energy, Energy Future Coalition, Environmental and Energy Study Institute, Center for American Progress and Set America Free are among the many public interest groups that are members of the coalition. Finally, Plug-In Partners have been endorsed by the American Public Power Association and many of its members around the country as well as the Edison Electric Institute.

Austin Energy has also committed \$1 million for rebates to Austin Energy customers who purchase plug-in hybrids when they become available.

The Congress, by funding DOE initiatives to develop and deploy PHEVs, will help ensure the success of the Austin Energy Plug-In Partner campaign and will be a significant step in lessening American dependence on imported oil.

PREPARED STATEMENT OF THE COAL UTILIZATION RESEARCH COUNCIL

CURC submits this testimony in support of increasing the DOE’s fossil energy budget by the following: coal R&D \$31.8 million; CCPI \$145.0 million; FutureGen \$54.0 million, in new appropriations.

Technology has facilitated a successful environmental transformation of the coal-based power industry, and all of this has been accomplished while maintaining the benefits of reliability and affordability. Improvements in technology have allowed dramatic reductions in emissions while providing consumers with some of the lowest cost electricity in the world. Many of these technology solutions emerged through an unprecedented collaboration between the public and private sectors, commonly cited as the “Clean Coal Technology Program.” For the past 20 years, this program has included two fundamental components:

- A basic research and development activity that was primarily government funded, and that took new ideas in the use of coal to a “proof of concept” level, and
- A program which has been approximately two-thirds private sector funded, that took these concepts and demonstrated their viability in first-of-a-kind commercial scale facilities, through a program currently labeled the “Clean Coal Power Initiative” and formerly referred to as the Clean Coal Technology demonstration program.

These two programs have created new generations of technologies that are cheaper and more effective in addressing the environmental concerns that pose barriers to continued or expanded use of coal in the United States. The benefits of these programs have been large. For example, just one technology—low NO_x burners—went from a concept in the 1980's to commercial demonstration in the 1990's and is now installed on almost all coal-fired power plants in the United States. The National Academy of Sciences concluded that nitrogen oxide and sulfur dioxide control technology programs had achieved significant success: “The resulting environmental savings translated to more than \$60 billion in damage and mitigation costs that were avoided”.¹ The General Accounting Office concluded that: “This [Clean Coal Technology] program serves as an example to other cost-share programs in demonstrating how the government and private sector can work effectively together to develop and demonstrate new technologies.”²

The technology development program at the Office of Fossil Energy has received broad recognition for its contributions to the Nation, including numerous “Power Plant of the Year” awards from Power magazine, “Top 100” awards from R&D magazine, and citations from the National Society of Professional Engineers. Power magazine called the development of fluidized bed coal combustors “the commercial success story of the last decade in the power generation business.”

The benefits that will flow to the Nation from the use of coal for power production have been projected at over \$400 billion in gross output in 2010.³ Other benefits are less easily quantified but are no less real, and include energy security, national security, and a degree of freedom for the U.S. Government to make geopolitical policy decisions not based, in part, upon the political preferences of oil exporting nations. Two hundred years’ supply of currently recoverable coal (at current rates of consumption) gives the United States a high degree of security if we choose to fully exploit this advantage.

The potential for coal to help in meeting the Nation’s future energy needs is almost unlimited. Coal can continue to provide clean, low-cost electricity. Coal can also provide a feedstock for production of chemicals and transportation fuels, and helps provide a low cost bridge to a hydrogen-based future economy. However, coal faces new environmental challenges: mercury control and carbon control. The formula that worked for previous environmental challenges—developing cost-effective technologies to address emissions control—will work in overcoming these new challenges as well. But it will be difficult for coal’s benefits to reach their potential without a continuing partnership between the government and the private sector.

As discussed below, CURC believes that the administration’s fiscal year 2007 budget request for research, development and demonstration of needed coal technologies is insufficient to allow the Nation to reap the benefits that can flow from expanded use of coal to meet our energy needs.

THE CLEAN COAL TECHNOLOGY ROADMAP

The CURC and the Electric Power Research Institute (EPRI) in consultation with the DOE, have developed a clean coal technology roadmap (see CURC website at www.coal.org). The roadmap identifies a variety of research, development and demonstration priorities that, if pursued, could lead to the successful development of a set of coal-based technologies that will be cost-effective, highly efficient and achieve greater control of air and water emissions compared to currently available technology. The roadmap outlines the technology steps necessary in order to achieve these goals. In addition, recognizing the ongoing concerns regarding global climate change, the roadmap includes a technology development program for carbon management, defined as the capture and sequestration (long-term storage) of carbon dioxide. In the event public policy requires CO₂ management at some future time, pursuit of the RD&D program outlined in the Roadmap will best ensure that cost-effective technologies will be under development or already developed. CURC is not alone in the belief that these carbon management technologies merit continued Federal support. In a report concluded in 2005, the National Research Council of the National Academies concluded that prospective benefits of the DOE carbon sequestration research program would likely total \$35 billion, if the Nation decided that carbon mitigation measures were necessary.⁴

¹News Release by the National Academies, accompanying publication of NAS report reviewing the DOE research program, July 17, 2001.

²Statement of Jim Wells, Director, Natural Resources and Environment, GAO, before the Subcommittee on Energy, Committee on Science, House of Representatives, June 12, 2001.

³“The Economic Impact of Coal Utilization in the Continental United States”, A. Rose, PhD, Pennsylvania State University, 2002.

⁴“Prospective Evaluation of Applied Research and Development at DOE”, NRC, p. 43, 2005.

Importantly, CURC and EPRI use a “portfolio” approach and advocate several technology development “pathways” that should be pursued concurrently to achieve the roadmap goals. As an example, the Nation should pursue both gasification and combustion-based technology paths.

CONCLUSIONS AND RECOMMENDATIONS

Using the roadmap as a tool to guide our Nation’s coal research and development (R&D) efforts, CURC has examined the fiscal year 2007 budget request for coal and submits the following recommendations.

—The funding proposed for the Clean Coal Power Initiative (CCPI), \$5 million in fiscal year 2007, is wholly inadequate to meet the needs that this program was created to address. The most critical challenges facing coal use today are near- and longer-term environmental constraints, particularly mercury control and the possible requirements to capture and store CO₂. The CCPI is needed to ensure the demonstration of advanced mercury control technologies, the demonstration of advanced power cycles that provide significantly greater efficiency in the conversion of coal to useful energy or products (thereby preventing CO₂ emissions) and the demonstration of first generation CO₂ capture and storage technologies, both for conventional coal systems and advanced combustion and gasification based systems. Oxycombustion, advanced scrubbers and chemical looping are examples of some of the important combustion-related carbon management systems under development.

With respect to mercury control technologies, thanks to an extremely successful program to develop and field test a number of improved mercury control technologies, we are now in a position to conduct commercial-scale, multi-year demonstrations of those technologies. Time for this activity is critical, as technologies will be needed to comply with the second phase of EPA’s mercury emission limits in 2018, and will probably be needed on some new coal-based power plants prior to that date.

It should be noted that the administration’s budget documents justified cuts in the CCPI program by alleging mismanagement by the Department. Frankly, we do not understand this opposition by OMB, particularly when the accomplishments of the demonstration program have been so substantial, and when global accolades for DOE’s program successes have been so prevalent. Funds appropriated for the CCPI program have been committed, perhaps not all under contract or spent, but committed to clean coal projects. Complex projects with estimated costs exceeding tens of millions of dollars will require significant periods of time to negotiate; none of this should be surprising. Indeed, one of the largest CCPI awarded projects, the Southern Company Transport Gasifier (IGCC) project with a total estimated cost of more than \$550 million and a DOE cost share of \$235 million was negotiated in 16 months and the project is underway.

CURC recommends that the funding for CCPI in fiscal year 2007 be increased to \$150 million. Combined with other resources available to the program, this could be sufficient to allow a solicitation for technology proposals in late 2006 or early 2007.

—The roadmap recognizes the benefits to technology development that the FutureGen project can provide and the CURC supports this important R&D program that can serve as a test bed for demonstrating technologies developed out of the DOE’s R&D projects. To succeed as originally envisioned, basic R&D activities must continue to provide the technology components needed in FutureGen, like lower cost oxygen production systems, cheaper synthesis gas cleanup, and hydrogen-capable combustion turbines. This world class project will require a long term and substantial financial commitment from the Federal Government. The administration seeks to use “old” and previously appropriated funds to support FutureGen in fiscal year 2007. These previously appropriated funds (\$54.0 million) along with \$203 million in other appropriations also previously appropriated should be set aside for use in later years when the critical and expensive construction stage of the project is undertaken. The \$54.0 million requested in fiscal year 2007 should be provided as new appropriations.

—Recognizing that the current fiscal situation is extremely difficult and that many worthy government programs have been reduced, some dramatically, the basic R&D funding levels identified within the CURC/EPRI Roadmap can generally be met within the totals that the Congress enacted and the President signed into law as part of the fiscal year 2006 appropriations bill for energy and water. The Congressional amounts (minus appropriations for “program direction”) enacted in fiscal year 2006 for the DOE’s coal R&D program was \$297.1

million. CURC is recommending a total increase of \$31.8 million to the amounts requested in the fiscal year 2007 budget. Adoption of these recommended increases would result in a total fiscal year 2007 budget of \$302.8 million which is slightly above amounts enacted in fiscal year 2006. In those coal R&D programs not recommended for additional funding in fiscal year 2007, CURC emphasizes that funding is adequate and that no funds should be taken from these programs. The specific recommendations are:

—*Advanced Turbines.*—This program, funded at \$12.8 million in the DOE's fiscal year 2007 request, should be funded at \$25.0 million. The additional resources are needed to ensure that the development of the hydrogen turbine remains on schedule as well as development of other advanced turbines. In both instances, such turbines are essential if carbon constraints are imposed. It should also be noted that hydrogen turbines are an important component of FutureGen.

—*Innovations for Existing Plants.*—Much progress has been made in developing and deploying technologies to reduce emissions from existing coal-fired power plants. However, we need to focus additional attention on mercury emissions control, fresh water consumption, solid waste generation, and overall efficiency improvements at these plants. Efficiency improvements achieved through application of advanced technologies will reduce carbon dioxide emissions as well as other emissions. An additional \$6.4 million is recommended for the Innovations for Existing Plants budget line. The additional funds would allow continued and accelerated progress particularly on mercury control technologies.

—*Advanced Research.*—This program should receive an additional \$8.4 million to support the on-going ultra-supercritical materials consortium as well as DOE support to university coal research programs.

—*Coal-derived Fuels and Liquids.*—CURC supports the DOE hydrogen program as coal will be a major fuel source if we transform, in part, to a hydrogen-based economy. However, we believe that the fossil energy fuels and liquids program should also focus on methods to reduce the cost of facilities to manufacture coal to fuels or liquids. A total of \$5.0 million in additional funding for this area is recommended. These additional funds should be made available for development of advanced catalysts and processes, reactor design, fuel property modification as well as system and design studies focused upon coal-to-liquids plant economics, operability and size of facilities to achieve widespread application of coal-to-liquids conversion technology in all regions of the United States. In addition, we are very concerned that on-going hydrogen studies at DOE are not being fully coordinated with the fossil energy office. Congress should insist that fossil energy be fully consulted and that any outside peer review of hydrogen R&D programs include reviewers designated by the fossil energy office.

In summary, CURC believes that coal can play a vital role in helping America meet its needs for reliable and affordable energy, but only if a continuing commitment to technology development allows coal to overcome remaining environmental challenges. The fiscal year 2007 budget request does not reflect such a commitment. Congress must restore funding to the CCPI technology demonstration program and also ensure that the FutureGen program is adequately and fully funded. In addition, modest adjustments to the basic R&D program are appropriate. A table summarizing these recommendations by CURC is attached to this statement.

PREPARED STATEMENT OF THE NUCLEAR ENERGY INSTITUTE

On behalf of the nuclear energy industry, thank you for your oversight of the Federal Government's used nuclear fuel management program and funding for the Department of Energy's (DOE) nuclear technology-related programs. My statement for the record addresses three key points:

—*Congress should fully fund the Yucca Mountain program to provide secure, environmentally responsible management of used nuclear fuel.*—NEI recommends that the program be funded at the President's request of \$544.5 million to enable DOE to submit a license application for Yucca Mountain to the Nuclear Regulatory Commission (NRC) next year.

—*The industry urges continued support for DOE's nuclear energy programs at \$560 million.*—NEI supports higher funding for DOE's Office of Nuclear Energy, Science and Technology to support the new Global Nuclear Energy Partnership and sustain existing programs. To achieve its objectives, DOE must have additional funding for Nuclear Power 2010, Generation IV reactor pro-

grams and the Nuclear Hydrogen Initiative. We strongly recommend full restoration of the University Infrastructure and Assistance Program along with continued funding for the Nuclear Energy Research Initiative and initiating the Nuclear Energy Systems Support Program.

—*The NRC's budget request of \$777 million should be reviewed for efficiencies.*—

NEI urges Congress to thoroughly examine the NRC's budget increased budget request to ensure proper resource allocation and to recognize reduced demands due to delays in Yucca Mountain licensing.

The Nuclear Energy Institute is responsible for developing policy for the U.S. nuclear energy industry. NEI's 250 corporate and other members represent a broad spectrum of interests, including every U.S. utility that operates a nuclear power plant. NEI's membership also includes nuclear fuel cycle companies, suppliers, engineering and consulting firms, national research laboratories, manufacturers of radiopharmaceuticals, universities, labor unions and law firms.

The nuclear industry generates electricity for one of every five U.S. homes and businesses, and is taking steps to develop affordable, reliable and clean electricity for the future. Nuclear energy is a vital component of a diverse energy portfolio that enhances America's energy security and fuels economic growth. We applaud the efforts and actions of this committee in recognizing nuclear energy as an important part of a diverse, competitive and secure energy policy for generations to come.

INDUSTRY SUPPORTS BUDGET REQUEST OF \$544.5 MILLION FOR YUCCA MOUNTAIN

The nuclear industry appreciates the strong support and leadership that the Congress has provided on the Yucca Mountain repository program. The Federal Government is already 8 years behind on its commitment to start moving used nuclear fuel from temporary storage at nuclear power plants across the Nation to a Federal repository. Under the most optimistic scenario, it will be several more years before the repository is licensed and operating. Since 1983, consumers of electricity from nuclear power plants have committed nearly \$23 billion in fees and interest to cover the costs of this program, and the Nuclear Waste Fund balance is more than \$20 billion.

The Federal Government taking title to and moving used fuel away from reactor sites, along with quantifiable progress on Yucca Mountain, are top priorities for the nuclear industry. Continued progress toward a used fuel management solution is important for building new nuclear plants that will maintain nuclear energy as a key component of our Nation's energy production mix throughout the 21st century.

DOE recently completed a thorough review of the Yucca Mountain program and has outlined needed improvements in the program. The agency's recent re-organization and lead laboratory designation are steps in that direction. We are encouraged that the department's leadership now has the necessary focus to move the program forward. The program shift toward a new fuel handling approach has promise to better facilitate licensing and operation of the facility.

The Secretary of Energy recently testified before Congress that the agency this summer will provide a schedule for submitting a license application for Yucca Mountain to the Nuclear Regulatory Commission, and for repository construction and operation. The industry strongly believes that it is critical that DOE meet this commitment. In particular, it is imperative that a high-quality license application be submitted as soon as practicable to demonstrate measurable progress on this critical program. There will be ample opportunity going forward for additional detail to be provided by DOE.

In order for this progress to be accomplished, we fully support the administration's \$544.5 million request for the Office of Civilian Radioactive Waste Management. This funding level is necessary for DOE to complete a high quality license application and prepare to defend it in the NRC licensing process, to improve existing Yucca Mountain site infrastructure and develop new infrastructure, and for repository facilities design. We also welcome Secretary Bodman's statement that he reserves the right to adjust the funding request in light of the program schedule plan that will be completed over the next few months.

The industry also supports legislative action by Congress to address regulatory, long-term funding and other issues to allow the department to move forward with this project. We look forward to working with the committee now that the administration has forwarded its legislative recommendations to Congress.

The nuclear industry has consistently supported, including in testimony before this committee, research and development of advanced fuel cycle technologies incorporated in the Advanced Fuel Cycle Initiative (AFCI). In anticipation of a major expansion of nuclear power in the United States and globally, it is appropriate to ac-

celerate activities in this program. The renaissance in development of nuclear energy requires advanced fuel cycles in the future.

President Bush has presented a compelling vision for a global nuclear renaissance through the Global Nuclear Energy Partnership (GNEP). This initiative provides an important framework to address challenges for nuclear power development related to fuel supply, long-term radioactive waste management and proliferation concerns.

We recognize that the Congress has important questions regarding this program. The industry believes that the near term focus for GNEP is for DOE to determine, by 2008, how to proceed with demonstration of advanced recycling technologies and other technological challenges. Consequently, the industry fully supports increased funding for the Advanced Fuel Cycle Initiative in fiscal year 2007. However, neither AFCI, nor GNEP reduces the immediate near-term imperative for progress on Yucca Mountain.

RESEARCH AND DEVELOPMENT NECESSARY FOR NEW NUCLEAR ENERGY

The Nation needs new electricity capacity. The Energy Information Agency forecasts that demand for electricity will grow by more than 40 percent over the next 25 years. Simple maintaining nuclear energy as 20 percent of U.S. electricity supply (its current share) will require construction of 50,000 megawatts (40–50 large plants) of new nuclear plants by 2030. DOE and the industry are working on cost-shared programs that will ready new nuclear energy technology for the marketplace midway through the next decade. Within the Nuclear Power 2010 program, funding should be allocated for demonstrating NRC licensing processes for new nuclear plants, including those for early site permits and the combined construction and operating license. The industry remains fully committed to this initiative and strongly recommends increasing funding to \$110 million¹ to meet the schedule for completion.

The industry believes that the government has a limited, early role in bringing advanced reactor concepts—Generation IV reactors—to the marketplace. NEI urges the committee's support for the development of a next-generation nuclear plant at the Idaho National Laboratory, funded through the Generation IV Nuclear Energy Systems Initiative program at \$100 million. The industry also supports the Nuclear Hydrogen Initiative at \$30 million.

Although DOE continues to fund the International Nuclear Energy Research Initiative (I-NERI), the domestic version of this program (NERI) has been superseded by a new initiative that continues the basic science of NERI under other DOE nuclear energy programs. The industry believes a collaborative basic science program between national laboratories, industry and universities like NERI should be continued in fiscal year 2007.

Congress authorized the Nuclear Energy Systems Support program as part of the Energy Policy Act of 2005, but DOE proposed no funding for the program in fiscal year 2007. The industry supports this new program and suggests \$15 million to fund an analysis of high performance fuel at the Idaho National Laboratory. Future budgets for this program could focus on developing technology to predict and measure the effect of aging on plant systems and components; and introducing new metals and other materials to assure the safety of key systems and components.

The industry also strongly recommends restoration of DOE's University Infrastructure and Assistance Program, which provides for vital research and educational programs in nuclear science at the Nation's colleges and universities. The global nuclear renaissance will demand highly educated and trained professionals in the engineering sciences. NEI also encourages the committee to consider supporting a new program within the Office of Science that encourages support for undergraduate and graduate programs in health physics, radiochemistry and other disciplines important to medical, energy and other applications of commercial nuclear technology.

NRC BUDGET AND STAFFING SHOULD BE REVIEWED

The NRC's proposed fiscal year 2007 budget totals \$777 million, an increase of \$35 million from the fiscal year 2006 budget, and the highest ever for this agency. Six years ago, the NRC's budget was \$488 million. This is an appropriate time for Congress to review the budget request and resource allocations in light of current demands and the other resources available.

The NRC's fiscal year 2006 budget request of \$702 million was increased by \$41 million by Congress for two purposes. The commission was allocated an additional

¹ The \$110 million is necessary to sustain progress with the NP 2010 program, and is exclusive of any projected carry-over of the DOE fiscal year 2006 budget that may or may not be available for fiscal year 2007.

\$20 million to fund an investment “over 2 years” to support the preparatory activities and pre-application consultations for the expected combined construction and operating license applications beginning in fiscal year 2008. The NRC also was provided \$21 million to be used to conduct “site specific assessments of spent fuel pools at each of the nuclear reactor sites.” Although Congress clearly established a limited period for funding in these two categories, the NRC has incorporated these amounts into its budget baseline.

As a result of the significant increases in the NRC’s budget, licensee fees have increased dramatically. Generic licensee fees for each reactor will increase from \$3.1 million to more than \$3.6 million. When other NRC fee increases specific to each reactor are included for licensees, NRC fees for power reactors will increase by over 20 percent in 1 year.

The NRC’s fiscal year 2007 budget request includes \$35.3 million for generic homeland security costs. Section 637 of the Energy Policy Act of 2005 modified the NRC’s user fee to exclude the costs of generic homeland security from fees recovered from licensees, except reimbursable costs of fingerprinting and background checks and the costs of conducting security inspections. The NRC’s budget proposal includes more than \$70 million for homeland security functions. Section 637 requires that only a portion of the NRC’s budget for this function be supported by general funds. The industry agrees that certain NRC security functions are for the common defense of the Nation and should be funded from general funds.

America’s nuclear power plants were the most secure U.S. industrial facilities before the Sept. 11, 2001, terrorist attacks, and are even more secure today. Over the past 5 years, the nuclear industry has made significant improvements in security at nuclear power plants. The NRC substantially upgraded its security requirements in 2002 and again in 2004. The industry has invested more than \$1.2 billion in security-related improvements and has increased its security guard forces from around 5,000 to more than 7,000. Security at commercial nuclear facilities is unmatched by any other private sector or area of the critical infrastructure, and the nuclear industry has been a leader in working with the Department of Homeland Security and other Federal and State resources on security issues.

INDUSTRY SUPPORT FOR ADDITIONAL ACTIVITIES

Nuclear Nonproliferation.—The industry urges the committee to support the President’s request for the MOX project, which is a vital element of U.S. non-proliferation activities. This year is particularly crucial to the project because construction is scheduled to begin.

Low-Dose Radiation Health Effects Research.—The industry supports continued funding for the DOE’s low-dose radiation research program.

Nuclear Research Facilities.—The industry is concerned about the declining number of nuclear research facilities, and urges the committee to fully fund DOE’s lead laboratory in Idaho for nuclear energy research and development.

Uranium Facility Decontamination and Decommissioning.—The industry fully supports cleanup of the gaseous diffusion plants at Paducah, KY; Portsmouth, OH; and Oak Ridge, TN. Commercial nuclear power plants contribute more than \$150 million each year to the Decontamination and Decommissioning Fund for government-managed uranium enrichment plants. Other important environmental, safety and/or health activities at these facilities should be funded from general revenues.

International Nuclear Safety Program and Nuclear Energy Agency.—NEI supports the funding requested for the DOE and NRC international nuclear safety programs. They are programs aimed at improving the safe commercial use of nuclear energy worldwide.

Medical Isotopes Infrastructure.—The nuclear industry supports the administration’s program for the production of medical and research isotopes.

PREPARED STATEMENT OF THE EXTERNAL ADVISORY COMMITTEE TO THE DEPARTMENT OF PETROLEUM AND GEOSYSTEMS ENGINEERING, UNIVERSITY OF TEXAS AT AUSTIN

The External Advisory Committee to the University of Texas at Austin Department of Petroleum and Geosystems Engineering is gravely concerned that the administration’s fiscal year 2007 budget request eliminates funding for the Department of Energy’s oil and natural gas technologies budget. We respectfully urge you to restore funding to at least the fiscal year 2006 appropriated level of \$64 million.

Many have tried to label this appropriation as corporate welfare for “big oil.” Nothing could be further from the truth. DOE’s oil and natural gas technologies budget ensures that all Americans benefit from the technological advances necessary to produce America’s ever more marginal oil and natural gas reserves.

This Draconian cut has a severe negative effect on the University of Texas' ability to produce quality petroleum engineers that this Nation so desperately needs. Department Chairman Bill Rossen informs me that more than half of the university's petroleum engineering research dollars would be eliminated if the program's budget were to be zeroed out. I can attest that the cut's effect on the Nation's other 15 petroleum engineering schools would be similar.

The External Advisory Committee that I chair is made up of oil and gas leaders throughout the country. We already provide significant support to the University of Texas at Austin and other similar research institutions. But more help is needed.

We are advised that the Department of Energy office of fossil energy already has in place safeguards to ensure that its research dollars are not giveaways or welfare checks to oil and gas companies, but rather support critical research and development efforts that are not otherwise taking place. We respectfully suggest that Congress could mandate the development of similar safeguards as a condition of this appropriation.

Public domain oil and natural gas technology research is a vital public policy interest of the United States that merits a Federal appropriation. Such research ensures the continued vitality of our academic institutions. It provides the technology development needed to supply America's energy into the future. It strengthens the American economy and our way of life, and it upholds America's energy security.

Thank you for your support of this critical appropriation request.

PREPARED STATEMENT OF THE NATIONAL MINING ASSOCIATION

NMA RECOMMENDATIONS

Department of Energy

Office of Fossil Energy.—\$54 million in new funds for the FutureGen Initiative; \$257 million in previously appropriated funds should be designated for the FutureGen Initiative; \$303 million for base coal research and development programs; and, \$150 million for the Clean Coal Power Initiative (CCPI).

U.S. Army Corps of Engineers

Civil Works Program.—See table below for NMA's list of priority projects and recommendations.

BACKGROUND

Office of Fossil Energy.—The NMA strongly supports the \$54 million in new funds for the FutureGen Initiative; recommends the rescission and advance appropriation of the entire \$257 million in prior year Clean Coal Technology Program funds for FutureGen's use in the out years; and recommends at least \$303 million be appropriated for base coal research and development programs. In addition, the Clean Coal Power Initiative (CCPI) should be funded at a level of \$150 million; the Advanced Turbine program should be funded at \$25 million; and the Advanced Separation Technologies should receive \$3 million.

The FutureGen Initiative will design and build, in the United States, a first-of-a-kind commercial-scale power plant that will provide the technological capability to: (1) capture and permanently store 90 percent or more of the plant's CO₂ emissions; (2) power about 150,000 American homes with the clean electricity it generates from coal; and, (3) co-produce hydrogen and potentially other useful by-products from coal.

Technological advancements achieved in the base coal research and demonstration programs such as gasification, advanced turbines, and carbon sequestration, provide the component technologies that will ultimately be integrated into the FutureGen project. NMA believes these programs should be funded at a level of at least \$303 million. Within this amount, the advanced turbine program should be funded at \$25 million instead of the requested level of \$13 million. The increase in funding will ensure the FutureGen project meets intended goals.

In addition, NMA recommends a \$3 million level of funding for the Center for Advanced Separation Technology (CAST), which is led by a consortium of seven universities with mining research programs. The advanced separations program conducts high-risk fundamental research which will lead to revolutionary advances in separation processes for the coal industry and develop technologies which crosscut the full spectrum of mining and minerals industries.

U.S. ARMY CORPS OF ENGINEERS

Civil Works Program.—NMA reviewed the proposed fiscal year 2007 request for the USACE's Civil Works Program and supports the request for additional expenditures from the Inland Waterway Users Fund and the strategy to accelerate high-priority projects that provide benefits to the Nation. However, NMA is very concerned that the proposed fiscal year 2007 budget does not provide sufficient funding to keep critical navigation projects on schedule, allow for the start of new projects, and address the maintenance backlog for existing navigation projects. Therefore, NMA provides the following recommendations:

- A minimum of \$5.5 billion should be appropriated in fiscal year 2007 for the Civil Works Program. This level balances the need to address the significant project backlog and the capability of the Corps with our Nation's needs for jobs, economic growth, homeland security and national defense.
- The effort to develop criteria for budgeting purposes is long overdue. However, NMA is very concerned that the use of performance-based budgeting, and specifically the performance budgeting tool Remaining Benefit/Remaining Cost (RB/RC) ratio, will have significant impacts on project appropriations. The navigation projects span many years and the benefits for many of the projects are not realized until completion. In addition, the lack of sufficient funding levels needed to keep projects on schedule compounds the impact. NMA does not support the administration's proposals for zero funding for the Kentucky River Lock and J.T. Myers Lock and Dam projects that are currently under construction. In the case of the Kentucky lock, more than 25 percent of the total project cost has been spent.

The fiscal year 2007 appropriations for the Corps' General Investigations account should be increased from \$95 to \$200 million. These studies are critical to ascertaining and developing future projects.

The fiscal year 2007 proposed funding in the amount of \$2.258 billion for the Corps' Operations and Maintenance (O&M) functions should be increased. More than half of the locks are more than 50 years old and in need of significant maintenance. Delaying necessary maintenance impacts the ability to move commerce efficiently, exacerbates further deterioration and accelerates the need for major rehabilitation and possibly at higher costs than necessary. The current backlog of critical maintenance for navigation is estimated to be more than \$600 million. The replacement value of the lock and dam facilities in the United States are estimated to be \$125 billion. As a Nation, we cannot abandon our inland waterway system and we must increase the monies spent on O&M.

Below is a table indicating NMA's Fiscal Year 2007 Priority Projects.

NMA FISCAL YEAR 2007 PRIORITY PROJECTS

	Fiscal Year 2006 Enacted	Fiscal Year 2007 Requested	Fiscal Year 2007 Efficient Funding Level
Construction:			
Robert C. Byrd Locks and Dams Ohio River, OH/WV	\$914,000	\$1,800,000	\$1,800,000
Kentucky River Lock Addition, Tennessee River, KY	23,000,000	.....	55,000,000
Marmet Locks and Dams, Kanawha River, WV	73,500,000	50,800,000	50,800,000
McAlpine Locks and Dams, Ohio River, IN/KY	70,000,000	70,000,000	70,000,000
Locks and Dams 2, 3, 4, Monongahela River, PA	50,800,000	62,772,000	62,800,000
J.T. Myers Locks and Dams, Ohio River, IN/KY	700,000	.....	9,000,000
Olmsted Locks and Dams, Ohio River, IL/KY	90,000,000	110,000,000	110,000,000
Winfield Locks and Dams, Kanawha River, WV	2,400,000	4,300,000	4,300,000
Emsworth Dam, Ohio River, PA	15,000,000	17,000,000	17,000,000
Investigations:			
Greenup Locks and Dam, KY and OH	225,000	.....	4,000,000
Emsworth, Dashields & Montgomery (Upper Ohio River)	1,275,000	.....	4,000,000

Regulatory Program.—NMA supports the administration's request of \$173 million for administering the Corps' Clean Water Act (CWA), Section 404 permit program and for implementing the Memorandum of Understanding (MOU).

The Regulatory Branch plays a key role in the U.S. economy since the Corps currently authorizes approximately \$200 billion of economic activity through its regulatory program annually. The ability to plan and finance mining operations depends on the ability to obtain Clean Water Act Section 404 permits issued by the USACE within a predictable timeframe. In addition, NMA recommends that a portion of such regulatory program funding be used for implementing the MOU issued on Feb-

bruary 10, 2005 by the U.S. Army Corps of Engineers, the U.S. Office of Surface Mining, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service. This MOU encourages a coordinated review and processing of surface coal mining applications requiring CWA Section 404 permits.

The National Mining Association (NMA) represents producers of over 80 percent of the coal mined in the United States. Coal continues to be the most reliable and affordable domestic fuel used to generate over 50 percent of the Nation's electricity. NMA members also include producers of uranium—the basis for 20 percent of U.S. electricity supply. NMA represents producers of metals and minerals that are critical to a modern economy and our national security. Finally, NMA includes manufacturers of processing equipment, mining machinery and supplies, transporters, and engineering, consulting, and financial institutions serving the mining industry.

PREPARED STATEMENT OF THE NATIONAL COMMUNITY ACTION FOUNDATION

Mr. Chairman, and members of the subcommittee, the National Community Action Foundation represents the 760 local Community Action Agencies (CAAs) that deliver most of the Weatherization Assistance Program investments.

We are requesting that the subcommittee reject the President's request that slashes the program by 33 percent in fiscal year 2007 and shuts it down over the next 3 years. We urge you, at the very least, to maintain the program at its fiscal year 2006 level. (The program could quickly ramp up its work if the subcommittee decides to provide a substantial and sustained increase, but we certainly recognize the budgetary realities Congress faces for fiscal year 2007.)

We were astonished that the administration retreated from 5 years of advocating for increased Weatherization funding just when oil and natural gas prices reached record highs. The 2007 budget request reduces Weatherization and other programs but increases subsidies to long-term technology development by corporate-academic-government research partnerships. We cannot dispute the need for engineering and basic research, but we seriously question whether it can only proceed if funding can be taken from low-income homes.

The cut will deny about 26,000 households the lasting and immediate bill reductions they expected to receive next year, after being wait-listed for "their turn" for several years. The planned termination of the program by 2010 will mean the difference between sickness and health and between stability and homelessness for millions of consumers now eligible for this important assistance. These sad effects will be realized decades before the new energy economy provides any relief. It is an unnecessary sacrifice.

The planned termination of the program means a cadre of thousands of skilled workers which is ready now to put the best available tools, new techniques and state-of-the art insulating materials and equipment in hundreds of thousands of buildings, will be diverted to the conventional construction work they perform when not delivering Weatherization today. Two decades of Federal investment in training and new materials may be lost.

As you are aware, even the administration has not retreated from its conviction that Weatherization operates efficiently and produces solid results in energy savings, safer homes and lower bills. In fact, the Secretary issued the following statement on April 3, 2006:

"Washington, DC.—U.S. Department of Energy (DOE) Secretary Samuel W. Bodman today announced \$140.3 million in weatherization program grants to 31 States and the Navajo Nation to make energy efficiency improvements in homes of low-income families; weatherization can reduce an average home's energy costs by \$358 annually. Total fiscal year 2006 funding is \$243 million and will provide weatherization to approximately 96,560 homes. 'Weatherizing your home is a valuable way to save energy and money,' Secretary Bodman said. 'The Department of Energy's weatherization program will help nearly 97,000 families make their homes more energy efficient.'

"For every dollar spent, weatherization returns \$1.53 in energy savings over the life of the measures. DOE's weatherization program performs energy audits to identify the most cost-effective measures for each home, which typically includes adding insulation, reducing air infiltration, servicing heating and cooling systems, and providing health and safety diagnostic services. Other benefits of weatherization include increased housing affordability, increased property values, job creation, lower owner and renter turnover, and reduced fire risks."

There was strong Senate support for the Energy Policy Act when it passed not even 1 year ago; it not only preserved, it more than doubled, the authorized size

of the Weatherization program by 2008. That Act signaled to the hundreds of thousands of low-income Americans on waiting lists for our energy services that the Congress is not only committed to incentives for long-term technological advances that transform our infrastructure; it sent the message that Congress intends to offer them effective permanent relief by reducing improving their dilapidated, wasteful housing as soon as possible.

Those weatherized in the past can expect their fiscal year 2006 household energy bills will be \$400 to \$462 lower than they would have been without the DOE program's investment. These average savings alone represent nearly a month's income to many of the elderly participants who rely solely on Supplemental Social Security, and are about one-quarter of the energy bills that will drain the resources of the average un-weatherized low-income consumer over the course of this fiscal year. The Department of Energy figure of \$358 is the multi-year average expected based on long-term price forecasts. In years like this one, extreme prices mean better protection for that Weatherized. Community Action Agencies are fully aware that the \$600 million fiscal year 2008 authorization is really an indicator of the direction the Congress is committed to follow, not a funding level. We urge the subcommittee to stay the policy course laid out last summer by, at the very least, sustaining the Weatherization program.

When our Nation first took controls off oil prices, and again when Americans were promised that electricity competition would drive the price of residential power down, an accompanying policy promise was that the poor would be protected from the risk of un-affordable energy. The promises have not been honored fully, but the Weatherization program, expanded as part of the original "social bargain" on energy in 1979, has evolved as a small but steady source of investment in lasting relief. The poor need Weatherization program investments for their houses because they lack the credit card, the savings, or the income to buy the home improvements that pay off steadily, year after year.

This year, nearly all American consumers have needed relief from energy prices, and millions of homeowners installed more insulation, repaired air leakage, and upgraded to more efficient equipment to stay warm and to keep their electrical devices running at lower cost. We all know conservation is the best and quickest bill reduction strategy, and most of us can use our energy more carefully. However, the low-income consumers already use less than 80 percent of the home energy that the average American uses even though their homes burn about one-third more gas or heating oil per sq. ft. because of their age and poor quality. There is not as much margin for the poor to cut back before indoor temperatures become dangerously low or high in summer.

Community Action's mission is to change the causes of poverty; wasteful and unhealthy housing can indeed be transformed by Weatherization, and CAAs consider it one of our most effective programs; it makes a lasting change for the family; it produces immediate reduction in energy bills, upgrades the building stock, and broadens the technical competence of the local building trades.

We also request that the subcommittee take two further initiatives that impose no cost. They are to:

- Request reporting from DOE that indicates how the Department is fulfilling the many responsibilities it is assigned under the statute following dramatic staffing reductions of the past 3 years and the reorganization expected on July 1, 2006, and
- Consider proposing a role for the skilled Weatherization workforce, when and if you review budgets for other Federal or State programs that bring energy efficient materials and technology to the residential market as a whole or to the task of building affordable housing in the Gulf Coast communities. Weatherizers are ready respond to energy-related consumer needs using other funds, and they can do more. For example, tens of millions of LIHEAP funds are spent to replace broken, dangerous and wasteful furnaces and other equipment. A program to subsidize more Energy Star equipment for low-income housing would soon result in many safer, warmer homes and transform the market for Energy Star equipment.

Many Weatherization providers are already partners in community development projects that are using renewable funds and new efficient green construction techniques. Funding comes from private partners, State and Federal housing programs and State utility system benefit funds. In fact, Weatherization programs are able to win non-Federal funds and partners because of their capacity and their strict accountability, both products of the DOE program. We estimate our network of Weatherizers will have delivered \$700 million in energy and housing services to the poor by the end of program year 2006, of which just over one-third comes from the core DOE program. This means Weatherization has the capacity to grow in response

to the urgent national need to use energy more responsibly. The subcommittee's past support has already allowed the program to get more done in this program year and Weatherization providers look forward to as much responsibility as you can possibly assign in the coming fiscal year.

PREPARED STATEMENT OF THE NATIONAL HYDROGEN ASSOCIATION

Chairman Domenici, Ranking Member Reid and honorable members of the committee, on behalf of the 100 members of the National Hydrogen Association (NHA), I would like to thank you for the opportunity to enter into the record testimony on the funding for hydrogen programs in the Department of Energy's fiscal year 2007 congressional budget request. For over 17 years, we have been an association dedicated to pursuing the research, development and demonstration of hydrogen and fuel cell technologies, leading to a firm basis for establishing and growing a commercial Hydrogen Economy.

SUMMARY

My testimony will make the following points that reflect the NHA's policy priorities:

- Full funding of the Technology Validation Program;
- Full funding of the hydrogen provisions in the Energy Policy Act of 2005 (EPAct 05—Public Law 109–58);
- Support for other enabling legislation and appropriations.

TECHNOLOGY VALIDATION PROGRAM

The validation program has ambitious and critical goals concerning durability, vehicle range, storage, attainable hydrogen fuel cost, data reporting, technology evolution, renewable hydrogen feedstock generation, codes and standards coordination and public outreach. Teams combine the efforts of both vehicle manufacturers and energy companies in 5-year partnerships, along with several other research firms, universities and National Laboratories. Here is why DoE's validation program is so important:

- The team projects involved in these “Learning Demonstrations” include detailed concepts for diverse and flexible approaches to vehicles, supply and infrastructure.
- Unique, historic partnerships have been formed between fuel, auto, and research firms—critical to reinventing new corporate relationships and making new markets succeed.
- The operational relationship between system components (hydrogen supply, on-board storage, vehicle, fuel cell, drive train) has to be learned in practice—it cannot be fully evaluated by simulations or bench testing. Successful integration of new components is difficult, and real problems must be solved in a commercial operating environment.
- Evolution of new technology is greatly assisted by bringing systems out of the lab, punishing them under real conditions, remedying the failures, and sending intractable problems back to the lab—while redesigning new demos. The quest toward commercialization will occur in many iterative steps.
- If funding were to lag, the Federal Government might become a less reliable partner, key parts of the partnerships could soften, and the scale of U.S. activity could shrink toward marginal ideas. The centroid of hydrogen development may move away from the United States.

ENERGY POLICY ACT PROVISIONS

Although the fiscal year 2007 budget request continues to build on the strong foundation of the President's Hydrogen Fuel Initiative—a 5-year commitment expiring in 2008—EPAct 05 gave the entire hydrogen program permanent authority. As a consequence, DoE has much work to do to implement the Act.

We certainly concur with the letters sent to Secretary Bodman and President Bush by the House and Senate (respectively) in late 2005 that asked for full funding of the hydrogen provisions in EPAct 05, without adverse impacts on the other energy efficiency and renewable energy programs in DoE. Specifically, the Dec. 21, 2005, bipartisan Senate letter highlights how the EPAct 05 makes the Federal Government a more reliable partner in building the Hydrogen Economy:

“The Secretary's scope of action has been expanded in key areas, and the hydrogen and fuel cell program has acquired considerable stability by its permanent authorization. Renewed focus on research, development, demonstration and state and

Federal purchase for early market transition will give the Secretary and industry higher quality technical options sooner.”

Further,

“Technology validations, the heart of the learning demonstration partnerships with industry, need to grow to include fleets of advanced vehicles, particularly light duty vehicles, transit buses, agricultural industrial and heavy duty vehicles.”

And,

“To achieve the acceleration of our efforts to build a hydrogen economy, we specifically recommend that the fiscal year 2007 budget request reflect the authorized levels of spending that have been approved by Congress in Titles VII and VIII of the Energy Policy Act of 2005.”

DOE HYDROGEN PROGRAMS

The President’s Hydrogen Fuel Initiative continues its strong run, with increased funding over fiscal year 2006. The hydrogen programs in EPO 05 built on the success of that initiative, which began in 2004 and might have ended in fiscal year 2008, but it has some ambitious 2015 goals that were being actualized by appropriations only 1 year at a time. This annual approach would have had a slim chance of realizing such long range goals and designs into the program an inherent lack of stability, particularly for the critical learning demonstrations.

As a baseline, the actual Title VII and Title VIII request for hydrogen is \$246 million (EERE + Science), or only 47.5 percent of EPO 05’s \$517.5 million. Additional hydrogen funding is included for the nuclear and fossil energy programs. Plus, the authorized activities under Title VII Vehicles and Fuels, have not been addressed in program planning, let alone in the funding request. Although the Senate Energy Committee agreed in October 2005 to forego activities for fiscal year 2006 under Title VII at DoE’s request, DoE agreed that this did not apply to fiscal year 2007. Nevertheless, there is much to do under sections 782 and 783 that does not require funding, but DoE’s dedication to the principles contained in the law. These shortfalls need explanation.

Additionally, there are three important studies in Sections 1819, 1820 and 1825 that deserve to be completed soon by DoE and would help inform industry and the Congress—that deal respectively with resolving international participation in the hydrogen program, economic development and employment aspects of a hydrogen economy, and a long-term Federal funding roadmap plus the carbon effects from a fully-realized hydrogen economy. These sections originated with Senators Alexander, Dorgan and Levin respectively, had strong industry and bipartisan support and were adopted by unanimous consent in the Senate’s Energy Bill, S. 10, and in the Conference Report for Public Law 109–58. We applaud DoE’s foresight in issuing a solicitation for the Section 1820 study, which is to be completed in late October.

On a positive note, DoE budget displays show that Technology Validation does receive about an 18 percent increase in fiscal year 2007 over fiscal year 2006 appropriations (\$33.6 million vs. \$39.6 million). The favorable increases in the Fossil Energy budget request for hydrogen activities are worth noting—but we would especially like to see more emphasis on hydrogen production from advanced, safe nuclear power. And given the magnitude of our national coal resources, FutureGen will simply need more stable funding over a longer time span.

CONCLUSION

We urge the committee to preserve these gains in the appropriations process, and add to them to be more consistent with EPO 05. Continued funding growth is designed into EPO 05 that is intended to accelerate the programs’ achievements, and create a far larger benefit pool than could be realized by R&D alone. After all, the job is to commercialize the results of R&D, along with that careful technical exploration.

We would like to see member requests moderate somewhat, and especially be tied more closely to DoE’s planning goals for technology development. DoE’s administration of these member requests also needs improvement, so that accommodating them does not mistakenly worsen the adverse impact to existing and mortgaged multiyear projects.

We thank you for the opportunity to submit this testimony. We look forward to continuing a fruitful working relationship with the committee, its staff, and all our stakeholders in building a successful Hydrogen Economy.

PREPARED STATEMENT OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society (ACS) would like to thank Chairman Peter Domenici and Ranking Member Harry Reid for the opportunity to submit testimony for the record on the Energy and Water Appropriations bill for fiscal year 2007. For fiscal year 2007, ACS requests the Department of Energy Office of Science be fully funded at President Bush's request of \$4.102 billion.

ACS is a non-profit scientific and educational organization, chartered by Congress, representing more than 159,000 individual chemical scientists and engineers. The world's largest scientific society, ACS advances the chemical enterprise, increases public understanding of chemistry, and brings its expertise to bear on State and national matters.

As Congress and the administration seek to bolster the economy, economists agree that investments in basic research boost long-term economic growth more than other areas of Federal spending. Numerous recent reports cite the growing challenges American faces from global competitors, including the National Academies of Science report "Rising Above the Gathering Storm".

Basic physical science investments foster the new technologies and train the scientific workforce which drive the Nation's public health, defense, energy security, and environmental progress. Although industry funds the bulk of national R&D, the Federal Government provides 60 percent of basic research funding and, remarkably, 40 percent of patents cite Federal research as their source. Yet Federal research in the physical sciences and engineering has been cut in half since 1970 as a percentage of GDP. Fortunately, the President, top Congressional leaders, and members of science and industry have all recognized the need to boost investment in physical sciences and engineering research. This investment has never been more important given its central role in advancing the Nation's economic, energy, and homeland security.

ACS BUDGET RECOMMENDATIONS

Current Federal efforts to advance energy efficiency, production, and new energy sources while reducing air pollution and other environmental impacts will demand increased investment in long-term energy research. By supporting people, research, and world-class science and engineering facilities, the Department of Energy's Office of Science expands the frontiers of science in areas critical to DOE's energy, environment, and national security missions.

The President's budget request represents visionary leadership to ensure American competitiveness and innovation by providing the largest investment in DOE Office of Science in over two decades. Many in Congress have joined with the President in calling for expanded investment in basic physical science research. The President's request for \$4.102 billion is consistent with authorized spending levels in Public Law 109-57 and is essential to ensuring the strength of our innovation economy.

Increases in the Office of Science will help reverse the declining Federal support for physical science and encourage more students to pursue degrees in these fields. The Office of Science is the largest Federal supporter of research in the physical sciences, funding almost 40 percent of research in these fields. The Office of Science fosters the new discoveries and technical talent that will continue to be essential to advances in coal, hydrogen, biomass, genomics, and many other technology areas. Additional funds should be directed to increase the number of grants, especially in core energy programs, and to improve research facilities. The Office is the primary source of Federal support in many research areas essential to our energy security and economy, such as catalysis, carbon cycle research, photovoltaics, combustion, and advanced computing. Increased investment is also important given the declining private support for long-term energy research.

INCREASE GRANTS IN CORE PROGRAMS

ACS recommends that increases for the Office of Science be directed to advancing core energy research across disciplines, which enables DOE to respond rapidly to new challenges. For example, DOE capitalized on long-term atmospheric chemistry research, particularly in aerosols, and quickly developed a single anthrax-bacterium detector. DOE must strengthen its ability to attract scientists and train the next generation of scientists and engineers by increasing the number of grants in its core programs without reducing their size and duration. Current appropriations allow the DOE Office of Science to fund one-third the proposals as the National Institutes of Health and the National Science Foundation. This rate is considerably lower than

those of other agencies and amounts to lost opportunities for both significant discoveries and the education of the next generation of scientists and engineers.

Within the Office of Science, ACS particularly supports the Basic Energy Sciences and Biological and Environmental Research programs. As the cornerstone of the Office, the Basic Energy Sciences (BES) program supports an array of long-term basic research to improve energy production and use and reduce the environmental impact of those activities. The BES program manages almost all of DOE's scientific user-facilities, and provides leading support for nanotechnology and advanced computing research—two priority research areas that will have important implications for energy efficiency and security. The Biological and Environmental Research (BER) program advances fundamental understanding in fields such as waste processing, bioremediation, and atmospheric chemistry to better understand potential long-term health and environmental effects of energy production and use and identify opportunities to prevent pollution. Progress in these fields is also needed to develop and advance new, effective, and efficient processes for the remediation and restoration of DOE weapons production sites. ACS supports a strong role for DOE in Federal efforts to advance pollution prevention and climate change research.

DOE AND THE SCIENTIFIC WORKFORCE

As the largest supporter of research in the physical sciences, DOE can greatly affect the training and number of scientists in industry, government and academia. Inadequate investment in any research field constricts the supply of trained scientists and engineers who apply research and develop new technology. For instance, declining support for nuclear science and engineering will greatly affect the nuclear sector as a majority of today's nuclear scientists and engineers near retirement. Another example is the synergistic relationship between the need for radiochemists and NIH's ability to conduct clinical trials. Advances in diagnosis and treatment in nuclear medicine are dependent on the synthesis of highly specific radiopharmaceuticals that target biological processes in normal and diseased tissues. The Office of Science, through BER supported research, occupies a critical place in the field of radiopharmaceutical research. The NIH relies on the Office of Science's basic research to enable clinical trials.

Another way for DOE to help attract students and retain talented scientists and engineers is to renew investments in scientific infrastructure. The Office of Science operates one of the most extensive and remarkable collection of scientific user facilities in the world, providing tools for research for more than 18,000 scientists funded by DOE, other Federal agencies, and industry. Many facilities are in poor condition or have outmoded instrumentation. Additional funding would allow for increased operating time, upgrades, instrumentation, and technical support. The proposed cuts could result in established facilities lying idle, allowing taxpayer investments to go unused.

National laboratories also play an important role in providing research and training opportunities to enhance the university curriculum. ACS supports the initial plan by DOE to utilize its national laboratories to help mentor and train science teachers. Students at all levels clearly learn better when their teachers have a deep understanding of the subject, and the first-rate multidisciplinary research and scientific professionals at the national laboratories certainly could be a rich resource for science and math teachers. ACS urges stronger coordination among agencies with significant K-12 math and science programs in order to maximize the Federal investment in this area.

ACS praises the work of Department of Energy leadership, and particularly Office of Science Director Ray Orbach, to establish a vision of America's scientific future with the 20-year facilities plan and a forward-thinking departmental strategic plan. ACS views these documents, along with the Secretary of Energy's Advisory Board report "Critical Choices: Science, Energy, and Security" as key elements of America's research and development portfolio. Growth in DOE Science funding is essential to realizing the goals in these documents, and ACS urges Congress to act to ensure this vision of a technologically advanced and safe America comes to fruition.

PREPARED STATEMENT OF THE NATIONAL RESEARCH CENTER FOR COAL AND ENERGY, WEST VIRGINIA UNIVERSITY

Chairman Domenici, Ranking Member Reid, and members of the subcommittee, coal supplies over half of our Nation's electricity and provides a viable alternative to produce transportation fuels, chemicals, and gaseous fuels. Previous coal research programs supported by Congress resulted in reduced emissions of criteria pollutants and increased efficiency in electricity generation at coal-fired central stations. Con-

gressional support for energy efficiency programs has led to increased efficiency in our energy-intensive industries and in our transportation sector. This statement is offered to urge continued strong investments in the Nation's fossil fuel and key energy efficiency programs. My testimony consists of general recommendations to maintain critical levels of funding in major energy programs and specific requests for support of projects in selected energy sectors. I have also included recommendations regarding the benefits of supporting academic research as a part of our national energy programs.

FOSSIL ENERGY PROGRAMS

We require continued investments in finding ways to use our indigenous fossil energy resources in an economical and environmentally friendly manner. While the administration speaks supportively for increased research for fossil fuel programs, I believe critical energy programs are under-funded in the fiscal year 2007 budget request.

Coal Programs

Clean Coal Power Initiative.—The administration has proposed only \$5 million for the Clean Coal Power Initiative (CCPI) for fiscal year 2007. Many owner-operators are hesitant to install new clean coal technologies unless they have been successfully demonstrated at commercial scale. The CCPI program is designed to conduct demonstrations in technology areas such as mercury control and advanced power cycles, both of which are of great national interest. We must also demonstrate coal-to-liquids technologies as part of the Clean Coal Power Initiative. Funding should be provided to the CCPI program at levels which would allow a solicitation for new proposals in early 2007 so that we can continue needed work to deploy advanced technologies for power generation and alternative fuels production.

Innovations for Existing Plants.—A robust research program is also needed for existing plants. The national installed coal power generation capacity of over 300 gigawatts will be in service far into the future since their premature replacement cost is expensive. Environmental concerns dictate that we make improvements in the existing fleet while we await the opportunity to install newer technologies when the existing plants are retired. The funding recommended by the administration in the budget line for Innovations for Existing Plants has been severely reduced for the fiscal year 2007. We recommend that an additional \$8 million be added to the Innovations for Existing Plants line, including full restoration (\$2.5 million) of the By-Products and Water Management sub-element. This sub-element funds critical programs for reducing mercury emissions and finds new ways to use the byproducts generated by combustion, both key elements in reaching the goal of a zero-emissions coal plant. Water shortages in some parts of the Nation are beginning to limit the installation of new power plants. We also recommend funding for programs to minimize the use of water in power generation and coal conversion applications.

Coal-to-liquids Research/Fuels Program.—Transforming coal into liquids would enable our Nation to reduce our dependence on imported petroleum. Polygeneration plants—those plants which produce a suite of products beside electricity—will hasten the deployment of advanced gasification technologies since co-producing value-added products such as hydrogen, liquid transportation fuels, synthetic natural gas, and/or chemicals improves the economics of the overall system. We recommend the addition of \$10 million to the Fuels Program for coal-to-liquids research to improve current conversion technologies and to develop new conversion processes, for computer-based design studies, and for systems modeling. A national program to reinstate our earlier coal-to-liquids programs is urgently needed to enable our country to maintain stable transportation fuel costs. We request that the work initiated in fiscal year 2006 to study the development of coal liquefaction facilities in China be continued at the level of \$0.7 million. This program is a minimal investment compared to the \$1.4 billion cost of the Chinese facility and will provide valuable information relevant to the deployment of advanced fuel production technologies in the United States.

Solid Fuels and Feedstocks Research/Fuels Program.—Successful deployment of coal conversion technologies depends in part on the quality of the feedstock in the input coal stream. Advanced research is needed to reduce levels of mercury emitted from pulverized coal combustion systems and to remove other pollutants upstream of the combustor. Often the preparation process results in discarding a large percentage of the coal mined because of the difficulty of dewatering and separating the coal fines from refuse material. These discards result in environmental pollution, the possibility of a catastrophe due to failures of water impoundments that retain the coal fines for settling, and increased costs for electricity. We request that the current funding for advanced separations research be increased to \$3 million for fis-

cal year 2007. Another important aspect of the solid fuels research program relates to producing value-added products such as carbon materials from coal. Lightweight carbon materials produced from coal, if used in applications such as the transportation sector to reduce vehicle weight, also serve to reduce our dependence on imported petroleum. We request that the lightweight composite materials program initiated in fiscal year 2006 be continued.

Focus Area for Computational Energy Science.—The President has identified supercomputing as critical to America's national security and essential to U.S. competitiveness, both technologically and scientifically. The President has called for increased funding to enhance this important tool and expand its use across a broad range of applications that enhance the U.S. position in the world's scientific community. Through modeling, various designs can be evaluated on computers at a much lower cost than for actual experimental research. The Computational Energy Sciences (CES) program in Fossil Energy supports supercomputing research both within the National Energy Technology Laboratory and for external researchers who receive grants for blocks of time on high-speed resources such as the Pittsburgh Supercomputing Center. However, the administration has recommended drastic cuts in the CES program for fiscal year 2007. We recommend that funding for Computational Energy Sciences be restored to its historic level of \$5 million, of which \$2 million should be allocated to continue the program of the SuperComputing Science Consortium (SC Squared) which supports high speed computer access for the fossil energy research community in academic institutions nationwide.

Oil and Natural Gas Programs

We are disappointed that the administration has chosen to recommend closing out the programs for oil and natural gas research in exploration and production. These programs provide important contributions to small producers, who can not afford the major expense of developing new technologies to recover a dwindling supply of these precious reserves. We recommend that Congress restore the oil and natural gas programs to at least the fiscal year 2006 levels. We request that funding be provided to continue important programs like the Petroleum Technology Transfer Council (PTTC), a nationwide program implemented through ten regional centers which reach user communities in our major oil and gas basins. The PTTC identifies and provides upstream technologies and technical assistance to small domestic producers. Without the resources available through the PTTC program, many small producers would become uncompetitive, further decreasing domestic oil and natural gas production.

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROGRAMS

The United States is increasingly becoming dependent on imported energy. Significant amounts of natural gas and electricity are delivered from Canada. Oil is supplied from Canada, Mexico, and other regions world-wide, some of which have unstable governments or philosophies which differ from our national best interests. The following comments are offered regarding programs considered key to maintaining our energy security and energy independence.

Industries of the Future

High energy prices have been a major reason for the loss of competitiveness of many of our energy-intensive industries over the past several years. Glass, aluminum, steel, chemical, coal and metals industries face stiff competition on the global market and are increasingly losing ground to international competition. Much of our chemical industry has already moved offshore.

The Industries of the Future (IOF) program provides one avenue for increasing the efficiency of production and reducing costs in energy-intensive industries. However, the administration has reduced its recommendations for funding the IOF (specific) program from the enacted level of \$37 million in fiscal year 2005 to a request of only \$17 million for fiscal year 2007. These reductions severely impact our ability to assist energy-intensive industries. We recommend that funding be restored to the fiscal year 2005 level. In particular, funding for the Mining sector program should be restored to \$4 million to enable completion of previously-awarded projects and the initiation of new research. With our Nation poised to be ever more reliant on coal for our energy needs, newer technologies must be developed to mine the harder-to-get coal as our resource base is depleted.

Electricity Distribution

Despite the unpleasant experience of the mid-summer East Coast energy blackout several years ago, the electric grid remains fragile and in danger of overloading in times of high demand. Improvements to the electric grid would ensure operational

reliability, reduce costs to the general public, and make our industries more competitive. Congressional support for continued investments in improving the reliability of the electric grid is recommended. Particular emphasis should be placed on maintaining and expanding the electricity transmission, distribution, and energy assurance R&D at the National Energy Technology Laboratory (NETL). We request that the Gridwise project on Integrated Control of Next Generation Power Systems initiated in fiscal year 2006 be continued at the level of \$1 million.

Transportation Research / Office of Vehicle Technologies

The research conducted under the Vehicle Technologies program will lead to the development of more energy-efficient and environmentally-friendly highway transportation technologies that will reduce the use of petroleum. The ability to test the performance of cars and trucks under field operating conditions is an essential part of this program. West Virginia University's Transportable Emissions Testing Laboratory has partnered with the Office of Vehicle Technologies for many years to conduct emissions measurement testing programs at locations nationwide. We recommend continued congressional support for this partnership and request that \$2 million of the Vehicle Technologies budget be directed to continue the transportable emissions testing laboratory program in fiscal year 2007.

CLOSING COMMENTS ON NEED FOR ACADEMIC RESEARCH PROGRAMS

Budget constraints for fiscal year 2007 will give rise to difficult decisions regarding which programs to fund. Fossil Energy and Energy Efficiency programs merit high consideration from the subcommittee because of their importance to our national security and our economic interests.

In your deliberations, I urge the subcommittee to give consideration to supporting or creating programs directed to academic research institutions. During the debate leading to the passage of the Energy Policy Act of 2005, several initiatives were introduced to support centers of excellence in coal technology, mining technology, and power systems technology. Energy research is high on the agenda for most, if not all, academic institutions. Current opportunities for academic researchers to compete for funding in fossil energy and energy efficiency areas are limited in the budget requests. For example, the Fossil Energy advanced research program has a budget of only \$3 million to support coal research nationwide and no comparable programs in oil and natural gas. Mining research opportunities will be eliminated if the administration budget request for the Industries of the Future program is supported by Congress. With the elimination of the U.S. Bureau of Mines, there is no standing program for advanced mining research.

Funding to support academic research has many benefits. Advanced research ideas are generated from such studies. Of almost equal importance is the aspect of maintaining the human capital to conduct advanced research in key areas. The dearth of support for mining technology research is responsible in part for the smaller number of mining engineering departments nationwide. We face a critical shortage of mining engineering graduates, an aging cadre of professors, and a smaller number of institutions which offer mining programs. Researchers skilled in coal geology/petrology and in coal conversion technologies such as direct and indirect liquefaction are becoming older and we face a potential shortage of such expertise once these individuals retire. Once this expertise of human capital is lost, we will be in danger of having to import our technologists or possibly redoing older research since the corporate body of expertise is lost. Supporting academic research also leads to spin-off technologies which support economic development and, in the case of energy, can assist the United States in staying the leader in promoting advanced technologies to address the challenges we face in meeting a global demand for energy.

I urge Congress to consider the benefits of supporting fundamental research at academic institutions as part of our national plan for energy and economic security.

Thank you for considering the recommendations offered in this testimony.

PREPARED STATEMENT OF IBACOS, INC.

IBACOS (Integrated Building And Construction Solutions) urges the Subcommittee on Energy and Water to provide \$23 million for the Department of Energy's (DOE) fiscal year 2007 Residential Buildings Integration Program (formally Building America). We further urge that the following language is included to ensure that the competitively selected Building America teams are funded at a percentage comparable to their historic funding: "Of these funds, \$15 million shall be provided for the research activities of the competitively selected Building America research teams and the Building America lead research laboratory".

IBACOS, through DOE, performs significant research into achieving new levels of energy efficiency in our Nation's housing stock.—IBACOS began working with the DOE's Building America Program as the founding team in 1993. The work of IBACOS and the other Building America teams has allowed industry leadership to drive cost-effective solutions that increase the baseline energy efficiency of the Nation's housing stock, and most recently, to begin to move us towards Zero Energy Homes (homes that produce as much energy as they use). Building America partners have shown that homes with significantly improved efficiency levels can be built at equal or lower purchase prices than conventional homes, with much lower energy bills and operating costs. These homes also exhibit increased building durability as well as improved occupant safety, health, and comfort. The research needed to develop systems and strategies to achieve the long-term goal of Zero Energy Homes is not simply applying lessons learned; rather, fundamental research is still required. This R&D, performed by the Building America teams is truly high-risk, high-payoff research. The research required to meet the goal of Zero Energy Homes is high-risk for the following reasons:

- Significant basic research is required to develop and integrate new technologies and systems into homes before they are proven effective enough to be applied in the field.
- This research is costly and risky and will obsolete several current products, systems and processes, and therefore will not be undertaken by the industry alone.
- The life cycle of this research is significantly longer than that of comparable industries.
- The homebuilding industry is extremely fragmented, with homebuilders having little ability to drive research, and a lower-than-average financial commitment to investment.
- Mechanisms do not currently exist within the homebuilding industry to integrate new technologies and strategies effectively.

However, the research required to meet the goal of Zero Energy Homes is also high-payoff for the following reasons:

- Once constructed, homes have the longest lifespan of any consumer product, providing the opportunity for a durable long-term reduction in energy use.
- Effective strategies to reduce energy use will positively impact consumers, as well as the Nation's energy demand.
- Successful research into integration strategies will allow new, high-risk, market-leading technologies and systems to be adopted more quickly and effectively.

IBACOS, through DOE, supports the improvement of the residential construction industry and provides support and recommendations to critical Federal programs.—

The Building America Program consists of five industry consortia (teams). Along with the four other teams, we partner with more than 300 residential builders, developers, designers, equipment suppliers, and community planners throughout the United States. All Building America partners have a common interest in improving the energy efficiency and livability of America's housing stock, while minimizing any increase in overall homeownership costs. Many of the systems used actually result in a lower cost, while others create only marginal increases in first cost and absolute overall reductions in annual homeowner cash flow. The five Building America teams pursue a collaborative agenda that will ultimately assist all homebuilders and benefit the Nations' homebuyers. In addition to performing the fundamental research needed to advance the energy efficiency of our Nation's housing stock, IBACOS and the Building America teams provide recommendations to a broad range of residential deployment partners including the EPA's ENERGY STAR Homes Program, HUD's Partnership for Advancing Technologies in Housing Program, and many industry associations and universities. Furthermore, the Teams are perhaps the best resource for DOE to educate the builder community on technology and integration breakthroughs. This education has been, in part, demonstrated through successful projects, where high-efficiency housing is being built and bought, such as Summerset at Frick Park (Pittsburgh, PA); Noisette (North Charleston, SC); Civano (Tucson, AZ); Pulte Home Sciences in VA; Forest Glen (Carol Stream, IL); Hunters Point Shipyard (San Francisco, CA); Stapleton (Denver, CO); Habitat for Humanity (GA, CO, TN, FL, MI, TX and throughout the United States); Summerfield (San Antonio, TX); Sun City (Las Vegas, NV); Premier Gardens (Rancho Cordova, CA) and others throughout the Nation as documented on www.buildingamerica.gov. The more than 300 private sector partners who work with the teams are experts in home construction, building products and supply, architecture, engineering, community planning, and mortgage lending. All construction material and labor costs for homes and communities constructed by Building America Teams are provided by DOE's private sector partners.

The IBACOS Building America Team is made up of more than 30 leading companies from the home building industry, including equipment manufacturers, builders, design firms, and other parties interested in improving the overall quality, affordability, and efficiency of our Nation's homes and communities. Although we are located in Pittsburgh, PA, our team members come from across the country. Our building product manufacturer, trade association, and non-profit partners include: North American Insulation Manufacturers Association (NAIMA) of Washington, DC; Dupont of Wilmington, DE; Carrier Corporation of Indianapolis, IN; Whirlpool of Benton Harbor, MI; USG Corporation of Chicago, IL; Lithonia of Conyers, GA; Georgia Pacific of Atlanta, GA; The Portland Cement Association of Skokie, IL; Whirlpool Corporation of Benton Harbor, MI; Cardinal Glass Industries of Eden Prairie, MN; Florida Heat Pump of Fort Lauderdale, FL; Owens Corning of Toledo, OH; E-Star Colorado of Denver, CO; and e-colab of Urbana, IL. Our range of builder and developer partners includes Pulte Homes of Bloomfield Hills, MI; Tindall Homes of Trenton, NJ; Aspen Homes of Loveland, CO; Hedgewood Homes of Atlanta, GA; Pine Mountain Builders of Pine Mountain, GA; Summerset Development Partners of Pittsburgh, PA; Noisette Development Partners of North Charleston, SC; Forest City Stapleton of Denver, CO; Solar Strategies of Philadelphia, PA; Civano Development Partners of Tucson, AZ; Washington Homes (a division of K. Hovnanian) of VA; Landmark Building and Renovation of Apex, NC; and Bozzuto Homes of Greenbelt, MD. Other builder and developer partners are located in CA, CO, FL, GA, IN, MA, ME, MN, NC, NJ, NY, NV, PA, and UT. Through these and other partners, the Building America Program has had direct influence in increasing the efficiency of nearly 30,000 homes to date. All of these homes use at least 30 percent less energy than a code-compliant home, and many exceed 50 percent in savings. All work done in these projects is part of the critical path toward achieving Zero Energy Homes.

Through DOE, significant energy-saving results have been achieved in residential construction, and encouraging research results on systems integration have helped to increase overall energy efficiency.—Results of the experience gained by the Building America teams have been reflected in both DOE and HUD roadmapping sessions, development of research priorities for National Labs, and cooperation on programs within DOE. One example is Building America's cooperative work with DOE's Windows research program to field test advanced window products with builders. Additionally, collaborative research activities with the National Labs, including NREL, ORNL, and LBNL results in the sharing of knowledge and resources to bridge the gap between Federal research programs and the industry. The Building America Program improves the affordability of homes by reducing energy use, and increasing the useful life of the homes, resulting in better use of capital and natural resources. The energy saved by a new home built to be 50 percent more efficient than average new construction is the equivalent of the energy used by a sports utility vehicle for 1 year. Investing in residential construction technology makes economic and market sense. By using improved materials and techniques, the Building America partners promote wiser use of resources and reduce the amount of waste produced in the construction process. Because of the homes' improved efficiency, emissions from electrical power will be reduced, potentially eliminating 1.4 million tons of carbon from the atmosphere over the next 10 years. DOE's residential programs will also save consumers more than \$500 million each year through reduced energy bills. These savings are permanent and significant.

Building America teams, such as IBACOS, help develop and implement widespread innovation in the fragmented residential construction industry.—Residential Buildings currently account for over 20 percent of the primary energy consumed by the United States. Each year, more than 1.5 million new homes are constructed (over \$70 million in revenue) and over a million are remodeled. Despite its size and impact, the industry is exceptionally fragmented. It comprises over 100,000 builders, many building only a few homes per year, others as many as 35,000. A multitude of residential product manufacturers, architects, trades, and developers further compound the problem of an industry in which it is very difficult to implement widespread technological innovation. Building America acts as an aggregator for identifying and pursuing research needs and consolidating relationships between the industry and National Labs.

There has also been little incentive for builders to improve on energy efficiency for a number of reasons. Energy and resource efficiency does not necessarily contribute to the bottom line of the builder; instead, it benefits the homeowner and the Nation, and because builders do not pay the annual energy bills, they have little incentive to add to the first cost of their product. Adopting new technologies and training staff and trades to properly install new systems and products is costly and challenging for builders. Finally, since builders are not good at sharing knowledge

among competitors, DOE's role is critical to expanding the practices beyond the first builders in. For these reasons, we are working to create higher performance, quality homes at low or no incremental costs, along with associated training, management, and technology transfer methodologies. We believe that because of this work, energy and resource efficiency, durability, and affordability will eventually be commonplace in the home building industry. A long-term and consistent commitment must be made to work in partnership with the housing industry. DOE's Building America Program is a proven industry-driven research approach that can reduce the average energy use in new housing by 50 percent by 2015, providing significant benefits to homeowners while benefiting the U.S. economy by maintaining housing as a major source of jobs and economic growth. Without building in significant energy savings now, the Nation risks using an extravagant amount of energy in the future. We must invest appropriately in technology, systems integration research, and builder operational processes needed to upgrade the performance of our housing stock, otherwise, we are mortgaging our future.

Building America is the key element in the DOE's strategy to reduce residential energy consumption.—Research, development, and outreach activities performed by the competitively-selected industry Teams in the Building America Program are the key element in the Department of Energy's strategy to reduce energy consumption in residential buildings. The Teams' activities focus on increasing the performance of new and existing homes that can be implemented on a production basis, while meeting consumer and building performance requirements. The Teams have been working on improving efficiency in housing since 1992, with successes being embodied in ENERGY STAR Home program and adoption by many production builders. We are now focused on the more difficult goal of creating strategies to achieve Zero Energy Homes. Current DOE-led research activities include:

- Systems integration, technology, and process research to ensure quality and performance;
- Indoor air quality, safety, health, and durability of housing;
- Thermal distribution efficiency, mechanical systems efficiencies and appropriate sizing;
- Incorporation of passive and active solar techniques;
- Techniques that increase productivity and product quality and reduce material waste;
- Use of recycled and recyclable materials; and,
- Building materials improvements and envelope load reduction and durability.

RECOMMENDATION

IBACOS (Integrated Building And Construction Solutions) urges the Subcommittee on Energy and Water to provide \$23 million for the Department of Energy's fiscal year 2006 Residential Buildings Integration Program (formally Building America.) We further urge that at least 60 percent or \$15 million of the appropriated funding be directed towards the industry-led core Building America Teams and the Building America lead research laboratory to develop cost effective, production ready systems in five major climate zones that result in houses that produce as much energy as they use on an annual basis. Along with the industry cost-share in the program of at least 100 percent, this program has and will continue to significantly catalyze improvements in what has traditionally been a very fragmented industry.

PREPARED STATEMENT OF SAGE ELECTROCHROMICS, INC.

SAGE Electrochromics, Inc., located in Faribault, Minnesota, is a developer of energy saving electrochromic (EC) window products and is working in partnership with the U.S. Department of Energy (DOE) to develop advanced tintable window systems. The National energy savings potential of high performance electrochromic windows is approximately 0.9 Quad—equivalent to the energy use of 10,000,000 homes per year.

We at SAGE urge you to increase the current DOE annual investment in the total windows program from \$4,900,000 per year to \$15,000,000—Energy and Water appropriations bill for Department of Energy, Energy Efficiency and Renewable Energy, Building Technologies Program, Windows. Within this program the specific budget for dynamic and super insulated windows should be expanded to \$4,000,000, up from the \$500,000 currently being pursued by DOE. This funding will allow the Department to reach the goal of zero energy buildings. Activity will take place at Lawrence Berkeley National Laboratory and SAGE Electrochromics, Inc.

DESCRIPTION OF ELECTROCHROMICS

An electrochromic window (door or skylight) is a solar control device that regulates the flow of light and heat with the push of a button. The window tint can be varied from fully colored to completely clear or anywhere in between. The EC properties are achieved through thin metal oxide layers on one of the glass surfaces, otherwise the construction is similar to the standard insulating glass unit (IGU) used in millions of homes and office buildings.

THE UNIQUE BENEFITS OF ELECTROCHROMICS

Industrial and government partners in the DOE EC program are performing cost-shared research and development that will lead to significant energy and cost savings by fundamentally changing the nature and function of window products for tomorrow's buildings. Significant savings in the cooling and lighting loads can be achieved while reducing peak electricity demand. Just as important is the ability of EC technologies to improve visual and thermal comfort and thereby increase worker productivity and the aesthetics of the home or office space.

Traditionally, adding windows to a building envelope has meant reducing energy efficiency because the other materials in the structure are much more energy efficient. However, with EC technology, windows will become multifunctional energy-saving appliances in the home or office space and thereby will allow increased use of windows for aesthetic reasons.

ACHIEVING ZERO ENERGY HOMES AND BUILDINGS (ZEB)

Zero Energy Buildings, a goal set forth by DOE, takes the whole building concept to the next level by integrating advanced building technologies. ZEB will result in self-sufficient buildings that produce as much energy as they use.

Achieving DOE Energy Efficiency and Renewable Energy's (EERE) goals of Zero Energy Homes and Buildings by 2030 will require a new generation of high performance windows. An aggressive, expanded RD&D program with private and public partnerships has a high probability of successfully developing and deploying the technologies, systems, and tools needed to achieve ZEB levels of energy performance. Increasing the current DOE annual investment from \$5,000,000 per year to \$15,000,000 per year for a 5-year period would kick-start this effort and stimulate the much larger private sector investment needed to achieve these goals. High performance windows incorporating highly insulating properties, switchable glazings, and/or other energy efficiency features could save 0.9 Quads/year as part of the ZEB effort if the technologies can be fully developed and achieve widespread market penetration by 2030. This information is based in part on information from DOE's Lawrence Berkeley National Laboratory. The energy savings potential is equivalent to the energy use of 10,000,000 homes per year.

CREATING A DYNAMIC AND SUPER INSULATED WINDOWS R&D PROGRAM

Window systems cost American homeowners and building operators about \$40 billion per year due to the heating and cooling loads they impose on our buildings. But windows can become net energy gainers rather than losers if buildings are well designed and their energy flows can be dynamically controlled.

The fundamental science and engineering supporting such goals is understood. An aggressive 5-year RD&D effort is needed to solve the critical technical market barriers, thereby reducing risks, clarifying benefits and stimulating enhanced private investment in manufacturing and marketing.

The groundwork for such a program has already been laid. In the 1980's DOE and the window and glass industry worked together to bring low-E to the market, an innovation that according to the NAS study has generated \$8 billion in benefits for a modest DOE R&D investment followed by much larger private investment. In the 1990's DOE and the industry successfully promoted the development and widespread use of spectrally selective glazings and window rating systems, each leveraging large private investments and contributing to additional savings. The challenge now for the next decade is to develop the cost-effective superinsulating and switchable technologies needed to achieve ZEB performance targets.

POTENTIAL SAVINGS

As an example of the potential impacts of an enhanced RD&D program we consider the energy savings impacts of a highly insulating, switchable window in both residential and commercial buildings. These are the windows that must be developed and deployed in order to meet the EERE goal of creating practical Zero Energy Buildings. The highly insulating window has a U value or heat loss rate of 0.1 BTU/

hr-°F-sqft, about 65 percent lower than today's Energy Star window. The tintable window has the ability to control solar heat gain over a dynamic range of 5 to 1—from 0.5 in winter to allow sunlight to offset heating, to 0.1 in summer to minimize cooling, or over an even larger range of light transmission on cloudy and sunny days to control glare and daylight.

The specific energy savings will depend on the final performance values offered and on the market penetration, which in turn will depend on cost. An aggressive RD&D program would optimize thermal properties and support breakthroughs in materials science that would lower production costs, thus expanding market impacts.

RESIDENTIAL SECTOR

In homes, switchable superwindows save energy three ways. In winter at night the low heat loss reduces heating loads. During the day the switchable coating allows solar heat to enter, reducing heating loads further. In summer the switchable coating keeps the sun out on hot days and modulates as needed for night view and cloudy days. The details of heat transfer vary with the climate region but this versatile, high technology package supports the EERE ZEB goal in all U.S. climates.

Large national energy savings could be obtained over the next 30 years. In northern climates like Boston and Chicago these window technologies alone would virtually eliminate the energy loss from windows and reduce overall home energy use by an additional 25 percent compared to homes with Energy Star windows, which themselves would use 20–30 percent less energy than today's typical homes. In southern climates such as Phoenix the largest savings come from reductions in cooling loads due to the switchable glazings. In these climates the improved glazings virtually eliminate the heating load and greatly reduce the cooling impacts.

Widespread deployment after 30 years in homes in both northern and southern climates would generate average annual savings of 0.55 Quads compared to a building stock, which would otherwise have improved to meet the performance levels of Energy Star windows today.

COMMERCIAL SECTOR

In the commercial sector the switchable superwindows provide three benefits in virtually all climates: (1) they reduce the net heating loads from the windows to very low values or convert the windows to net gains; (2) they minimize the cooling loads due to the windows, and (3) by carefully modulating daylight, they provide savings of about 50 percent of the lighting energy in zones with windows or skylights.

This technology package is versatile and adaptable to fenestration designs in virtually all climates and commercial building types. It makes it easier for architects to design buildings that provide daylight and view without imposing added thermal loads. By modulating daylighting and controlling glare, it helps create productive work environments that are thermally comfortable and energy efficient, lowering electric lighting use in the process by 30–60 percent. Widespread deployment after 30 years would generate average annual savings of 0.35 Quads compared to buildings with more conventional fenestration solutions.

ADDITIONAL WORK TO BE DONE REQUIRES FURTHER INVESTMENT

Materials and Processing Research and Development.—Activities must focus on continued optimization of the device and the individual thin film layers. Improved optical performance is needed to insure user satisfaction and broad adoption of this energy-saving technology. Advanced materials for better dynamic range will result in maximum daylighting for building occupants yet still eliminate glare from computer display terminals when direct sunlight impinges on the workspace. Nanocomposite materials must be incorporated to achieve a more neutral color with enhanced fracture toughness of critical films. Low cost materials will be introduced along with rapid processing technologies (e.g. total in-line, high throughput vacuum deposition of all coatings). Additionally, solar powered EC windows with wireless control systems will be developed for ease of installation—especially in retrofit applications.

Large Area Manufacturing Technology/Engineering.—Activities should include development of rapid, large area inspection tools to reduce defects for higher yields. Also, advanced manufacturing technologies such as laser patterning and bar coding will be implemented for flexible manufacturing with reduced costs for tooling and product changeovers. High volume production of large area EC glazings will require the implementation of in-situ diagnostics for real-time automatic control of thin film uniformity. Additionally, consensus electrochromic window performance require-

ments must be developed together with standards-setting organizations and will entail significant testing in the initial stage to establish the technical basis for performance requirements.

Systems Engineering and Application.—The DOE program must include extensive field trials of electrochromic windows in buildings. Occupant feedback on performance, comfort level and other parameters will be solicited and utilized to design ergonomic control algorithms and hardware. Multiple window control should also be demonstrated to ascertain how to tie the adjacent windows together for solar management of the overall space. Long-term testing of switchable window systems over the full range of outdoor climatic conditions is required to assess product reliability.

Advanced Window Development.—As we move to Zero Energy Buildings, increasing levels of window performance will be required. Work must be initiated to produce highly insulated windows in which heat loss is reduced by at least a factor of 2 over currently available products. These windows will be integrated with EC glazings to produce the high R-value dynamic windows needed for ZEB. R&D activities include the investigation of gas filled and evacuated window cavities as well as improved edge and frame materials. Work will also be carried out to support design tools and rating systems to evaluate window efficiency.

PREPARED STATEMENT OF THE NATIONAL COALITION FOR FOOD AND AGRICULTURAL RESEARCH

Dear Mr. Chairman, Ranking Member Reid and members of the subcommittee, on behalf of the National Coalition for Food and Agricultural Research (National C-FAR), we are pleased to submit comments in strong support of enhanced public investment energy biosciences research as a critical component of Federal appropriations for fiscal year 2006 and beyond.

National C-FAR urges the subcommittee and committee to approve the President's proposal in the American Competitiveness Initiative, Advanced Energy Initiative and fiscal year 2007 budget request for an increase of 14 percent to \$4.1 billion for the DOE Office of Science. Included with the President's budget request is \$255 million for the Chemical Sciences, Geosciences and Energy Biosciences Division. A total of \$35.8 million within the division is requested by the President for the Energy Biosciences program. We urge you to support the President's request for Basic Energy Sciences, the Chemical Sciences, Geosciences and Energy Bioscience Division and the Energy Biosciences program within the division.

At a time when our Nation's energy security is being seriously challenged, this modest increase in a small, but highly effective program is a wise investment with potentially momentous benefits to the Nation. The Department of Energy's biosciences program is an excellent example of where a modest Federal investment can yield tremendous societal benefits. Energy costs are escalating, dependence on petroleum imports is growing and concerns about greenhouse gases are rising. Research, extension and education can enhance agriculture's ability to provide new, renewable sources of energy and cleaner burning fuels, sequester carbon, and provide other environmental benefits to help address these challenges, and indeed generate value-added income for agricultural producers and stimulate rural economic development.

National C-FAR endorses the President's call in his State of the Union Address for the Nation to conduct energy research for bio-fuels to help break the Nation's addiction to foreign oil. Research on plant cellulose to produce biofuels from on crop residues, switch grass, wood chips and other sources could build on current production of ethanol and biodiesel from crops help transition a significant portion of the Nation's economy away from imported petroleum products to domestically produced bio-fuels.

The Energy Biosciences program supports world-leading research on plants and microbes conducted primarily by university-based scientists throughout the country. Competitive grants are awarded through a peer review process based on the highest standards of scientific merit.

National C-FAR applauds the Energy Biosciences program's active involvement in inter-agency cooperation and collaboration. By working closely with the U.S. Department of Agriculture, programs in both agencies benefit by leveraging funds where missions converge to advance vitally important research.

Basic energy research on plants and microbes supported by the Energy Biosciences program contributes to advances in renewable resources for fuel and other fossil resource substitutes from American agriculture, clean-up and restoration of contaminated environmental sites, and discovering new knowledge leading to home-grown products and chemicals now derived from petroleum.

The DOE Office of Science's Office of Biological and Environmental Research, through its Genomics GTL Roadmap, is undertaking an aggressive systems biology plan to accelerate the scientific discovery needed to support the development of practical applications to fulfill DOE energy and environmental missions.

The DOE-BER Plant Feedstock Genomics for Bioenergy program conducted jointly with USDA-Cooperative State Research, Education, and Extension Service-National Research Initiative supports genomics-based research that will lead to the improved use of biomass and plant feedstocks for the production of fuels such as ethanol and renewable chemical feedstocks.

National C-FAR commends the committee for its ongoing support of basic research on plants and microbes within the Energy Biosciences program and within the Office of Biological and Environmental Research. Past research sponsored by the Energy Biosciences program led to the landmark discovery of how to break down plant cellulose into ethanol. Other research sponsored by the Biosciences program led to new findings on the capture of energy from photosynthesis. Increased knowledge in this area could lead to a better understanding of how to manage carbon dioxide in the atmosphere. Further research in this area could also contribute to development of alternative energy sources.

INTEREST OF NATIONAL C-FAR

National C-FAR serves as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension and education. National C-FAR is a nonprofit, nonpartisan, consensus-based and customer-led coalition established in 2001 that brings food, agriculture, nutrition, conservation and natural resource organizations together with the food and agriculture research and extension community.¹

National C-FAR is deeply concerned that shortfalls in funding in recent years for food and agricultural research, extension and education—both through the U.S. Department of Agriculture and through relevant programs in other agencies—jeopardize the food and agricultural community's continued ability to maintain its leadership role and respond to the multiple, demanding challenges that lie ahead. Federal funding for food and agricultural research, extension and education has been flat for over 20 years, while support for other Federal research has increased substantially. Public funding of agricultural research in the rest of the world during the same time period has reportedly increased at a nearly 30 percent faster pace.

National C-FAR believes it is imperative to lay the groundwork now to respond to the many challenges and promising opportunities ahead through Federal policies and programs needed to promote the long-term health and vitality of food and agriculture for the benefit of both consumers and producers. Stronger public investment in food and agricultural research, extension and education is essential in producing research outcomes needed to help bring about beneficial and timely solutions to multiple challenges.

As a coalition representing stakeholders in both the research, extension and education community and the "customers" who need and depend upon their outcomes, National C-FAR urges expanded public participation in the administration's research, extension and education priority setting and funding decision process and stands ready to work with the administration and other interested stakeholders in such a process.

National C-FAR appreciates the opportunity to share its views and stands ready to work with the chair and members of the subcommittee and committee in support of these important funding objectives.

PREPARED STATEMENT OF THE DEPARTMENT OF PETROLEUM AND GEOSYSTEMS ENGINEERING, THE UNIVERSITY OF TEXAS AT AUSTIN

Committee members, your committee is considering the budget for the Department of Energy, including the appropriation for the Oil and Gas technology program, which has been eliminated in the administration's proposed budget. I am writing to describe the impact the loss of this program would have on the teaching of Petroleum Engineering in the United States.

¹As part of its mission, National C-FAR seeks to increase awareness about the value of food and agricultural research, extension and education. For example, National C-FAR is hosting an educational series of "Lunch-N-Learn" seminars on the hill, featuring leading-edge researchers on timely topics to help demonstrate the value of public investment in food and agricultural research, extension and education. More information about National C-FAR and its programs is available at <http://www.ncfar.org>.

My department receives 40 percent of its funding for graduate research from this one program. I believe the figure is similar at other Departments of Petroleum Engineering in the United States. Research funding is critical to graduate education in Petroleum Engineering, of course. In the short term it is the means by which graduate students attain the level of expertise necessary to advance the technology for efficient production of oil and gas. The research sponsored by this program is also crucial to undergraduate education. Over the long term it provides the means by which junior faculty attain tenure and all faculty maintain and sharpen their skills. At a modern research university it is simply impossible to maintain an undergraduate educational program without a vital graduate research program.

No other Federal program funds research in the broad field of oil and gas production. No other branch of science or engineering, including those that have substantial private funding (microelectronics or pharmaceuticals, for instance), is expected to fund university research entirely from private sources.

The loss of the lead the United States now enjoys in oil and gas technology would be a tragedy for the country. U.S. production would decrease, U.S. fields would increasingly be exploited by foreign companies, and producers in unstable parts of the world would turn to other countries for the expertise they need to exploit their own resources.

PREPARED STATEMENT OF NATIONAL WIND WATCH, INC.

INTRODUCTION

National Wind Watch™, Inc. is a non-profit organization dedicated to raising awareness of the risks and related impacts of industrial wind energy development on the environment, economy, and quality of life. The organization represents local citizen groups and individuals seeking to protect their property rights and community values, maintain nationally significant scenic resources and protect America's wildlife. The organization advocates an intellectually honest and scientifically sound assessment of the benefits and costs of industrial wind development with the objective of becoming a resource of information and assistance for individuals, local groups, and decision-makers seeking the facts about industrial wind power. Far too often, debates about wind power have over-stated its potential benefits and ignored its tremendous costs.

SUMMARY OF POSITION

National Wind Watch does not oppose funding of research and development for wind energy, but stresses that any increases in monies allocated be correctly focused. Most of any future research and development should now be focused on the detrimental impacts and mitigation techniques of wind development including, but not limited to: actual impacts on property values in areas where wind development occurs; actual net impacts on employment; life cycle analysis of environmental impacts (positive and negative); grid system stability and reliability under increasing penetration of wind, and within lower-quality wind sites. Given the inherent and perceived conflict of interest, National Wind Watch recommends that the National Renewable Energy Laboratory NOT hold responsibility for such analysis but only be permitted to participate.

SUPPORTING COMMENTS

During the debate leading up to passage of the Energy Bill in 2005 there was discussion as to whether the United States should adopt a Renewable Portfolio Standard or RPS. The Senate passed the RPS as an amendment, but the House voted it down. Senator Lamar Alexander correctly noted at the time that the RPS was "all about wind" citing factors that would limit implementation of other renewable sources including solar, hydro, and geo-thermal.

Senator Alexander also noted that, according to testimony before the Energy Committee and other sources, in order for the United States to achieve the standards in the RPS, it could "require building more than 100,000 of [the] new, massive wind turbines". Today, there are less than 7,000 such wind turbines in the United States. The U.S. Treasury Department is on record stating the wind subsidy, if renewed each year for the next 5 years, would reimburse wind investors for 25 percent of the cost of wind production and cost taxpayers \$3.7 billion over those 5 years.¹ Gen-

¹ <http://www.windwatch.org/documents/126>, Remarks Of Senator Alexander—Windmill Legislation Introduction.

eral Electric Wind, one of the largest manufacturers of wind turbines, experienced a 500 percent growth in its wind business in 2005 due to the renewal of the wind production tax credit in 2004. On a unit production basis, wind is subsidized more than 10 times any other energy source, yet contributes least to our energy security. Further, as the amount of wind generation increases, negative grid stability impacts grow exponentially.

National Wind Watch has watched the recent surge in wind development throughout New York, Pennsylvania, Virginia, and elsewhere in the United States and the impacts of this development on rural communities. Town boards and local officials are ill-equipped to evaluate the true impacts of these facilities. At the State level, some form of RPS has already been put in place in 23 States. This translates into additional State pressure on the community to embrace the wind plant, quiet opposition, and degenerate the permit process.

In the face of this development, the September 2005 GAO Report titled "Impacts on Wildlife and Government Responsibilities for Regulating Developing and Protecting Wildlife" stated ". . . that the impact of wind power facilities on wildlife is more studied than other comparable infrastructure, such as communication towers, important gaps in the research remain. First, relatively few pre-construction monitoring studies have been conducted and made publicly available. It appears that many wind power facilities and geographic areas in the United States have not been studied at all." Where they have been studied (e.g. Altamont Pass in California) the studies find significant work to do to reduce continued and on-going decimation of wildlife, including endangered and protected species.

While requests for additional pre-construction studies may be made, the local communities often do not have the money to pay for original research at a site. In many cases, the research should not be confined to the limited hundreds of yards area where the turbines are located, but would involve a regional review to cover secondary impacts related to erosion, impacts to water quality, tourism and the economy, and bird migration patterns. In the absence of local funding, National Wind Watch has found multiple cases where wind companies have agreed to conduct such studies, but also assume authority over the parameters of the studies and, in so doing, predetermine the outcome.

Continued installation of wind turbines throughout our rural and mountainous landscapes without scientific, impartial review of the impacts of this industrialization would have devastating effects of some of the most precious ecosystems in the world. After decades of government-subsidized research and implementation, it is time for the wind industry to no longer be treated as an "infant industry". Rather, it is time for the industry to start paying for much of its way, consistent with the maturation of the technology. Any money now should go to research, once and for all, the impacts of these massive turbines on our wildlife, open spaces, property values, health and safety of residents living in the vicinity of turbines, and the quality of rural life.

National Wind Watch respectfully requests that you deny further funding for wind energy research and development, and direct this funding to the detrimental impacts and mitigation techniques of wind turbines. We also recommend the National Renewable Energy Lab NOT be in charge of such analysis but only allowed to participate.

PREPARED STATEMENT OF SOUTHEASTERN FEDERAL POWER CUSTOMERS, INC.

Mr. Chairman and members of the subcommittee, on behalf of the Southeastern Federal Power Customers ("SeFPC" or "Customers"), I am pleased to provide testimony in reference to the administration's fiscal year 2007 budget request for the Southeastern Power Administration ("SEPA") and the U.S. Army Corps of Engineers ("Corps"). SEPA and the Corps operate the Federal Power Program in the Southeast which benefits millions of electric ratepayers throughout the States in the South that are served by SEPA Power. I will elaborate in my testimony on each of the following items of interest to the SeFPC: supporting the administration's request for \$34.4 million for Purchased Power and Wheeling activities and \$5.7 million in program direction for SEPA; funding of construction and operations and maintenance needs related to Corps projects that provide power marketed by SEPA; and lastly our grave concerns regarding the administration's proposed Agency Rate Change provision.

SEPA purchases, transmits, and markets the power generated at Federal reservoirs to municipal systems, rural electric cooperatives, and other wholesale customers throughout the Southeast. The SeFPC has enjoyed a long and successful relationship with SEPA that has greatly benefited over 6 million ultimate retail cus-

tomers that are SeFPC members. As the subcommittee is aware SEPA markets the energy and capacity that is generated from the Federal reservoir projects in the Southeast. The SeFPC represents some 238 rural cooperatives and municipally-owned electric systems in the States of Alabama, Georgia, Mississippi, Kentucky, North Carolina, South Carolina, Florida, and Virginia, which purchase power from SEPA.

In some cases, SEPA supplies as much as 25 percent of the power and 10 percent of the energy needs of SeFPC customers.

SUPPORTING THE ADMINISTRATION'S REQUEST FOR THE SEPA PROGRAM

The administration's fiscal year 2007 budget proposes to appropriate \$34.4 million for Purchased Power and Wheeling ("PPW") activities and \$5.7 million for program direction. Because the funds appropriated for these programs are returned to the Treasury through rate payments made by SeFPC members in the same year in which the appropriations are spent, these programs have a neutral impact on the U.S. Treasury. All of these funds will be returned to the Treasury in 2007. We thank the subcommittee for following the administration's recommended funding levels last year and once again, encourage the subcommittee to follow the administration's proposal for SEPA's program direction and PPW funding levels this year.

CORPS PROJECTS PROVIDE THE POWER MARKETING BY SEPA

The SeFPC membership is dedicated to providing reliable and economic power for its consumers. We therefore are concerned with the lack of specific information in Operations and Maintenance ("O&M") funding proposed in the President's fiscal year 2007 budget request.

This year the Corps' fiscal year 2007 Civil Works budget included a new layout for Operations and Maintenance funding. Historically, project funding was divided by State with specific funding amounts given to each project listed; however, this year O&M projects are categorized by Water Resource Regions and there are no specific funds cited for those projects mentioned. We are deeply concerned with the lack of specific information available on the requested O&M funds. As it stands now, over half of the hydroelectric generating facilities operated and maintained by the SAD in the SEPA Georgia-Alabama-South Carolina ("GA-AL-SC") System are slated to receive "minimal operations and maintenance" funding within the President's fiscal year 2007 budget request.

The Jim Woodruff Lock and Dam project within the Jim Woodruff System and the Cordell Hull Dam & Reservoir in the Cumberland System are both mentioned as projects needing minimal O&M funding, as well. We urge Congress to seek more specific information from the Corps on how much they propose to spend on O&M activities at each site. Until we know what the specific dollar amounts are and can define the actual amount referred to as "minimal" by the Corps, we, and members of Congress, can not be confident that significant infrastructure failures may occur due to insufficient O&M funding.

The age of many of the hydroelectric generating facilities operated and maintained by the Corps in SEPA's service area are nearly 50 years old. Major rehabilitations of generating units are critical if projects of this age are to continue in service. It is important to note that when a generating unit becomes inoperable, SEPA may be forced to pursue the purchase of expensive replacement power. This could result in a reduction of energy provided to customers, forcing the SeFPC members to purchase expensive energy elsewhere. Thus, we are pleased to see the Wolf Creek, KY project in the Cumberland System scheduled to receive \$31 million in construction funds for dam safety purposes within the President's fiscal year 2007 budget; however the GA-AL-SC System, as a whole, will suffer due to significant decreases in requested construction dollars. Within the Kerr-Philpott System of projects, we also understand that rehabilitation work on the turbines and generators at the Kerr project has been threatened due to a lack of funding. However, this has not been a result of SEPA failing to collect sufficient funds in the rates. In fact, SEPA has collected over \$240 million in rates for Corps repairs that has not been provided to the Corps.

AGENCY RATE CHANGE PROVISION

The SeFPC is concerned about a proposal within the President's fiscal year 2007 budget that, if not stopped, would impose administratively a higher level interest rate on new investment allocated to hydropower production. This proposal would raise rates with no apparent benefit to the hydropower customer; it is simply a back-door tax on the ultimate consumers of power marketed by SEPA. This proposal to increase interest rates to the "agency rate" level has emerged with virtually no

public discussion. Congress should provide much more active oversight over the Corps' activities due to the magnitude of the proposed change and the precedent that could result from it.

The PMAs are the rate-making agencies charged with marketing electricity from Federal hydroelectric facilities operated by the Corps and the Bureau of Reclamation ("Bureau"). In the Southeast, when the Corps makes an investment in a hydroelectric facility, SEPA must recover the cost of that investment in the rates charged to its customers. For a half century, the PMAs have set interest rates either following explicit instructions from Congress or by charging a rate that collects the Federal Government's cost of appropriated dollars.

Now, the administration's budget seeks to increase the interest rate charged on all new investments at projects whose interest rate is not set by law. This "agency rate" is higher than the current interest rate paid by SEPA. This "agency rate" reflects the interest cost to loan needed funds to government corporations. However, SEPA, the Southwestern Power Administration ("SWPA") and Western Area Power Administration ("WAPA") are not government corporations and do not borrow funds from the U.S. Treasury. As I have stated before, their rates are set to recover the appropriations established by Congress for the investment in the hydro-electric facilities and for costs to operate these projects.

We understand that the administration has suggested that the government corporation rate is more appropriate for the PMAs because of the risk of default. This argument simply ignores the statutory authority under which the PMAs operate and long-standing history of repaying the Federal investment in these projects. SEPA must collect all of the costs of generating hydropower at Federal facilities in the Southeast.

By law (the Flood Control Act of 1944), SEPA must recover all of the costs of producing power. Rate schedules are developed by SEPA after a notice and comment period and submitted to the Secretary of the Department of Energy for further review and implementation on an interim basis. Once the Secretary approves the rates on an interim basis, the Federal Energy Regulatory Commission ("FERC") has the responsibility to confirm on a final basis the rate schedule developed by SEPA. SEPA, the Secretary of the Department of Energy, and FERC must set a rate that by law recovers the Federal taxpayer's investment in the Federal Power Program. If an existing rate is insufficient to meet repayment obligations, SEPA must file a new rate and include appropriate increases to ensure all repayment obligations are met. In other words, there is a multi-layered review process and legal obligation that ensures that the PMAs will not default on outstanding obligations.

With no real threat to PMA defaults on outstanding debt, the subcommittee is left with little substantive reason why the interest rate on new investment should be increased. As the proposed change will only serve as a revenue enhancement measure and provide no additional benefits for PMA customers, the members of the SeFPC wholeheartedly encourage members of the Energy and Water Development Subcommittee and full Appropriations Committee to stop the administration from implementing this budget proposal.

We appreciate the opportunity to present our views and will gladly respond to any inquiries that the subcommittee may have.

PREPARED STATEMENT OF THE CASCADE COMMUNITY PARTNERSHIP

Ladies and gentlemen of the committee, thank you for the opportunity to submit written testimony regarding the U.S. Department of Energy's fiscal year 2007 budget as it pertains to geothermal research funding.

I represent a group of citizens in Cascade, Idaho—the Cascade Community Partnership, supported by the Valley County Board of County Commissioners, the City of Cascade, the Cascade School District and the Cascade Medical Center Hospital District—who are working toward a fairly lofty goal, but given the current state of petroleum supply, demand and cost in the world today, a fairly sensible one, that of achieving some level of energy self-sufficiency here in Valley County.

We, as a group, are somewhat chagrined that, given the current world situation regarding oil and energy in general, research funding for what is a viable form of alternative energy in the West—geothermal—would be zeroed out in the U.S. Department of Energy's budget for the coming fiscal year. I should add here, that the proposal outlined below has very strong support from all of the principals involved, and strong bi-partisan support at that.

We are in the midst of several studies involving Chevron Energy Solutions and IdaTherm LLC, an Idaho geothermal energy development company, and expect final reports within the next couple of months. We will then have additional seismic sur-

veying and geochemical testing to conduct in order to further refine the information in those reports. However, preliminary indications are that we may have the potential for a geothermal resource in Valley County, Idaho, that could generate up to 100 megawatts of electricity. While that is a small amount of energy in the global picture, it is a project that could inspire other communities with similar resources to pursue the same type of development. Enough of those pieces could add up to something very, very significant, something that could help this Nation wean itself from the oil spigot. Beyond energy production, the partnership is also finalizing a strategic plan that includes use of geothermal water for a heating district, to heat greenhouses and conduct aquaculture, among other uses, all of which should benefit our rural economy.

We have uncovered a number of potential sources of funding for capital construction, and for further research to narrow down our potential drilling site. But, the big gap in getting any such project off the ground is the risky business of drilling an exploratory geothermal well. The DOE funding for such activities in the past has been a great contributor to geothermal exploration.

We would urge that you, members of the Senate Subcommittee on Energy and Water, find a way to restore some of that funding, specifically that relating to the drilling of geothermal exploratory wells, which in recent years has amounted to about \$4 million every budget cycle. But, we would also urge that the funding be restored with a new innovative approach.

Another member of the partnership's steering committee and I recently met in Boise, Idaho, with representatives of IcelandAmericaEnergy, a Reykavik-based firm that is interested in exporting its vast geothermal expertise to other parts of the world. We had a very fruitful discussion, perhaps the most important aspect of which was the exchange concerning the geothermal exploration fund that was established in Iceland in the early 1970's to encourage geothermal exploration. It is essentially a revolving loan fund that is tapped to provide matching funds for other private/public sources of money for exploratory drilling. Comparing the geothermal picture in Iceland with that in the Western United States is, to a great extent, a case of apples and oranges, but the basic concept of a self-sustaining revolving loan fund, with incentives to encourage continued exploration, seems valid.

With restoration of funds for geothermal research, we would encourage you to direct that it be used as "seed money" to establish a self-sustaining revolving loan fund for geothermal exploration. As for the administration of the fund, we would suggest the DOE's geothermal energy division, or perhaps the Intermountain West Geothermal Consortium based at Boise State University, as two possibilities. There is certainly the expertise in either program to screen applications to make sure that applicants have done their "due diligence," the homework and preliminary work necessary to ensure that the fund's resources are indeed going toward drilling an exploratory hole that has at least a 50/50 chance of success. Should the fund work as a number of us believe it can, there will be no need to approach Congress in the future with requests for additional funding for geothermal exploratory well drilling.

Attached to this testimony is more detail about the proposed loan fund in the form of an "explainer" that includes some assumptions concerning risk and probabilities—numbers that we're told are valid in the geothermal industry in the United States—along with a sample spreadsheet about how the fund might operate. A number of much better financial minds than mine have examined this and agree that it's an approach that has merit.

We, as a community, thank you for your time and serious consideration of this matter. If you have further questions about my written testimony or proposal, please don't hesitate to contact us. Thank you again for your time and consideration.

REVOLVING LOAN FUND PROPOSAL

Assumptions

That geothermal wells are drilled at a success rate of 50 percent—some experts in the field believe 60 percent is achievable. In Iceland, the rate is 90 percent, but that is in Iceland. It is expected that success rate will increase as more is learned about subterranean resource.

That private industry (partners) will be willing to participate in the program as a matching partner. Discussions, and an already existing track record pertaining to the grant program, indicate that willingness may exist.

That a proven geothermal resource is worth more than just the cost of drilling a well.

That projects proposed for funding under the program would be heavily scrutinized—that the science and research leading up to site selection has been done, been done well, and then reviewed by knowledgeable experts.

Basic Proposal

Money presently granted by Congress for exploratory geothermal well drilling through the United States. Department of Energy—money that has, in the past, been granted to geothermal explorers—would be converted to a revolving loan fund.

If successful, the borrower would repay the fund at twice the amount that was borrowed.

If unsuccessful, the loan would be forgiven, and the private partner would also be reimbursed out of the loan fund an amount equal to 50 percent of that private match. This step is to encourage continued geothermal exploration. Because of that feature, the fund would actually be paying for 75 percent of the cost of drilling an unsuccessful exploratory geothermal well.

At this point, there is nothing in the pro forma spreadsheet to cover costs of administering the program, nor money included there to cover the costs of reviewing the data developed by the loan applicant.

However, in reviewing the spreadsheet, it seems that there should be money available for those purposes.

For the past few years, DOE has been budgeted \$4 million each funding cycle for exploratory drilling.

Revolving loan fund	Loans	If unsuccessful, cost ¹	If successful, re-payment ²	Fund balance
Beginning fund balance				\$4,000,000
First project	\$400,000	\$600,000		3,400,000
Second project	350,000	525,000		2,875,000
Third project	400,000		\$800,000	3,675,000
Fourth project	300,000	450,000		3,225,000
Fifth project	500,000		1,000,000	4,225,000
Sixth project	400,000	600,000		3,625,000
Seventh project	350,000		700,000	4,325,000
Eighth project	400,000	600,000		3,725,000
Ninth project	500,000		1,000,000	4,725,000
Tenth project	300,000	450,000		4,275,000
Eleventh project	400,000	600,000		3,675,000
Twelfth project	350,000		700,000	4,375,000
Thirteenth project	500,000	750,000		3,625,000
Fourteenth project	400,000		800,000	4,425,000
Fifteenth project	350,000	525,000		3,900,000
Sixteenth project	400,000		800,000	4,700,000
Seventeenth project	500,000	750,000		3,950,000
Eighteenth project	400,000	600,000		3,350,000
Nineteenth project	400,000		800,000	4,150,000
Twentieth project	500,000		1,000,000	5,150,000

¹ In unsuccessful ventures, cost to fund is total of loaned amount plus 50 percent of the private sector/local match is repaid that investor.

² In successful ventures, the loan is repaid at 200 percent (can be repaid over time at additional interest).

And on and on . . .

—Of course, this simple spreadsheet doesn't factor in costs associated with administration of the fund, nor costs for peer review of data.

—The above spreadsheet also shows a less than 50 percent success rate, with 9 successes to 11 failures.

—Depending on timing, it appears the fund could also absorb a few more failures.

PREPARED STATEMENT OF THE INTERSTATE OIL AND GAS COMPACT COMMISSION

Chairman Domenici and members of the subcommittee, thank you for the opportunity to submit testimony on the appropriation to the Department of Energy's Office of Fossil Energy. My testimony represents the views of the governors of 30 member States of the Interstate Oil and Gas Compact Commission (IOGCC). These States account for virtually all of the onshore domestic production of crude oil and natural gas. As stewards of these resources, the States strongly support restoring the appropriation to, at the very least, the current budget level for research and development (R&D) for oil and natural gas projects administered by the Office of Fossil Energy. Taxpayers are very supportive of Federal investments in energy security, and there is no better investment than in R&D.

As I prepare this testimony we stand as a country very close to yet another "energy crisis." Crude oil prices reached more than \$75 a barrel—a price level not experienced in our country's history. In addition, the prices of heating oil, natural gas

and gasoline also reached record highs. The U.S. domestic oil and natural gas industry today supplies about 40 percent of our Nation's demand for oil. The rest is imported—a number which is growing every year—making us more and more vulnerable to international crises and foreign economic manipulation. Our dependence on others for our energy security has never been greater.

One thing we can count on, however, is that domestic supplies of crude oil and natural gas are our best hedge against this vulnerability and increasing import dependency. Besides energy security there are a myriad of other reasons why domestic production is preferable to imports:

- Our domestic resources are produced under the world's most effective environmental protections, which were established and enforced by the States.
- Domestic resources create high-quality jobs here at home and provide the energy that powers our standard of living. Few realize that stripper oil wells (wells producing less than 10 barrels per day) account for about one-quarter of the lower 48 States' onshore domestic oil production and stripper gas wells (wells producing 60 Mcf per day or less) about 10 percent of onshore domestic gas production. This is a critical natural resource.
- Despite perceptions to the contrary, large quantities of oil and natural gas remain onshore the United States. These resources represent the most stable and secure energy available. These resources may exist in fields that have already been discovered and await a new technology that results in cost-effective recovery. Or they may lie in reservoirs yet undiscovered due only to a lack of technology appropriate for deeper horizons or greater geologic complexity. The bottom line is vast reserves remain untapped. While recovery rates have increased dramatically in the past 50 years and exciting new tools have been developed for exploration, still more can be done to reach the full production potential for reservoirs.

Many experts believe R&D is the most important factor in maximizing the availability and utilization of petroleum resources, especially domestic reserves.

Several years ago, the Task Force on Strategic Energy Research and Development noted that, "There is growing evidence of a brewing 'R&D crisis' in the United States—the result of cutbacks and refocusing in private-sector R&D and reductions in Federal R&D."

A more recent report being compiled this month by the IOGCC confirms the declining trend in R&D expenditures while the country is experiencing a corresponding increase in reliance on imports. Major oil companies once poured millions into research and development. Today, however, their focus has largely moved overseas and offshore. Eighty-five percent of the wells in the United States are drilled by independent oil and natural gas producers (producing roughly 40 percent of the domestic oil and 65 percent of the domestic natural gas). Such smaller independents lack both the resources and infrastructure for significant R&D.

The IOGCC report concluded that "[w]hen private R&D is compared to Federal expenditures, the outlook is more bleak. Private spending is substantiated . . . but Federal spending remains disproportionately small compared to the relative importance of oil and gas to U.S. energy requirements."

The decline of Federal and private support for oil and gas research is well documented. The reasoning for cutting government support seems steeped in politics and a failure to understand the importance of Federal R&D to our domestic oil and gas industry and our energy security. However, this is a new era of uncertainty in our energy security that requires a fresh look at spending priorities.

At present, our own economic recovery continues to be questioned, and an energy shortage would certainly slow the comeback. Middle East energy supplies are at considerable risk with war and internal conflict that remains a constant threat. The recent anti-U.S. rhetoric from Venezuela has caused companies to back away from future oil and gas investments in this country, creating yet more uncertainties in a major country supplying petroleum to the United States.

If the United States is to maintain its ability to produce its domestic supplies of oil and natural gas, Federal expenditures on R&D must fill some of the void left by private industry. Federal funding on oil and natural gas must increase if the United States is to maintain its ability to produce the domestic oil and natural gas resources our country so desperately needs. But instead of filling the void and expanding Federal expenditure on R&D, the administration's budget for fiscal year 2007 eliminates oil and gas research.

In fact, the proposed budget calls for cutting the petroleum technology R&D program at the very moment that our country could benefit the most from technology breakthroughs that can be applied to our own resources.

This is still so much promising work the taxpayers of this country support: new methods of drilling that reduce impacts to the environment; new materials that

allow better, faster drilling; new chemicals and biological tools that increase production; better uses of renewables in the production of fossil fuels; minimizing waste; and creating high quality jobs.

There have been many success stories from the DOE oil and gas research program. One recent, striking example of how DOE makes a real contribution to advances in environmental protection, energy production and innovation comes from a DOE-IOGCC project in California. Under DOE's Preferred Upstream Management Practices (PUMP) program, the project is proving that unmarketable gas can be used on site to provide power to oil wells previously idle. At the same time, the project is meeting the strict air quality standards in the Los Angeles area. DOE funding for this project was matched 100 percent by other partners, which enabled the government to double its R&D investment. Every government program investment should be as effective.

This is but one example of DOE helping provide leadership in demonstrating a technology that may have much broader implications for operators in 30 other oil and gas-producing States who now won't have to reinvent the well in order to satisfy environmental restrictions and the urgent need for domestic energy.

Through careful regulation, IOGCC member States have helped maximize production and minimize wasteful practices that can lead to the premature abandonment of reservoirs. States have also developed innovative approaches to deal with temporarily idled wells, created incentives that maximize production and supported R&D that improve recovery rates and lower finding costs.

Going forward, the IOGCC believes that a balanced and effective energy policy must encompass a number of fundamental principles, with R&D serving as a centerpiece in each. Other guiding principles include conservation of resources both in the producing and consuming sectors, encouraging domestic production to create economic growth and stability, increasing access to public lands for responsible development and prolonging production from wells at economic risk.

We strongly encourage the subcommittee's support of increased funding in oil and gas research as a first step in implementing an energy plan that makes sense for our country's future.

PREPARED STATEMENT OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION

INTRODUCTION

The Solar Energy Industries Association (SEIA) appreciates this opportunity to offer written testimony regarding the solar energy research and development programs of the Department of Energy. SEIA is the national trade association of solar energy manufacturers, dealers, distributors, contractors, installers, architects, consultants, and marketers, working work to expand the use of solar technologies in the global marketplace.

SECURITY, PROSPERITY, ENVIRONMENTAL PROTECTION

We anticipate that the annual global growth rate of the photovoltaics market—30–50 percent—will continue to be the norm for many years into the future (though near-term silicon supply shortages will limit growth for the next year or two.) By 2015, PV will provide 5–10 GW of electric capacity (enough to power 1–2 million homes); avoid 10 million metric tons per year of CO₂ emissions; and employ 30,000 new workers. An additional 5–10 GW of concentrating solar power has been forecast for the American Southwest by the Western Governor's Association and several consultancy reports.

No other technology can match solar's environmental benefits, ability to reduce natural gas demand, high employment intensity, and high-tech manufacturing benefits. However, all of these aggressive deployment forecasts assume continued progress on the industry's technical challenges at a rate at least matching historical norms; and the current soaring growth of the industry means the United States must make substantial investments if it is to maintain this progress—and stay ahead of other nations.

THE GOAL

It now appears possible to have all solar technologies broadly competitive on a simple economic basis with their conventional fuel competition in the United States before 2015—with steady progress in certain high value markets leading up to that date. This target appears achievable both for photovoltaic electricity and solar thermal displacement of conventional energy (in the retail market) and concentrating solar power (in the wholesale market.)

SURGING GLOBAL INDUSTRY, TENUOUS U.S. LEADERSHIP

The last few years have been a period of exceptional growth and change for all sectors of the industry.

Since 2001, the global market for photovoltaics has quadrupled in size—from just under 400 megawatts of new annual capacity to more than 1,600 last year—approximately 412 billion worth of new product. Meanwhile the United States' global market share, formerly more than 50 percent, dipped below 10 percent.

2005 saw the first new construction of utility-scale Concentrating Solar Power plants in more than a decade.

Solar water heating experienced surging growth in the presence of unusually high prices for all conventional fuels.

Across all three technologies, surging demand and increasing economies of scale have driven a continuous feedback loop—each solar panel or power plant coming off of the line makes the next one cheaper. In fact, solar electricity costs on average less than half as much as it did in the 1990's—with the recent runup in natural gas prices, this is for the first time within striking distance of many retail electric rates.

Wall Street and Silicon Valley have taken notice, as well. Investment capital is surging into the industry at an unprecedented rate from publicly-traded stocks and venture capital funding; analysts estimate more than \$1.5 billion of capital went into photovoltaic manufacturing expansion last year alone, and currently planned utility investments in concentrating solar power run to over \$150 million per project.

CONTINUING INDUSTRY CHALLENGES

However, there are also severe challenges facing the industry as a whole.

The unprecedented growth of the photovoltaic sector has placed a severe strain on global supplies of silicon. (While as late as the 1990's, the global solar industry subsisted on waste and off-spec silicon from the microprocessor industry, it now demands more than half of global supply.) This has bottlenecked production and created a supply/demand imbalance that threatens the steady progress of cost reductions that have driven this industry within the realm of conventional "grid" electricity pricing. There is a real sector-wide need for improved manufacturing processes to relieve this bottleneck and continue price stability.

Responding to soaring conventional energy prices and policies enacted by the Energy Policy Act of 2005, Concentrating Solar Power manufacturers have effectively restarted this long-dormant industry "from scratch." They face considerable hurdles in scaling up their production by orders of magnitude and presenting investors with proven technologies sufficiently advanced to enable rapid deployment.

Solar water heating continues its history of slow, steady growth in the United States. However, the United States still employs this technology at less than one-tenth the rate of major European nations, and must move aggressively to develop novel lower-cost and more integrated systems if this technology is to realize its potential for near-term natural gas usage reduction.

In all cases, there is a continued need for Federal research—not to supplant the increasing role of private investment in expansion and research and development, but to provide a framework and pathway for bringing solar truly into the mainstream of U.S. energy resources, and provide broadly-used tools to continue rapid growth. Given the current energy situation, and the escalating concern of most Americans regarding energy issues, it is no longer acceptable merely to continue solar R&D programs at the current level.

PHOTOVOLTAICS—THE SOLAR AMERICA INITIATIVE

Accordingly, we strongly support the Solar America Initiative (SAI) as laid out in the administration's 2007 budget request. This budget proposes a new \$139.47 million photovoltaic research program—an increase of more than 78 percent over fiscal year 2006. Additionally, the SAI represents a substantial shift in how DOE's solar programs administer and direct their research.

Where previous photovoltaics research focused on DOE laboratory R&D, with an emphasis on incremental cost reductions and potential future breakthroughs, we anticipate that the SAI will bring a more rigorously selective and goal-centered philosophy more focused on the near-term barriers to the real possibility of large scale solar deployment. In keeping with this philosophy, an increased emphasis on industry/university/DOE partnerships will leverage Federal funding through the increasing availability of private sector capital to the industry.

CONCENTRATING SOLAR POWER

The 2007 budget request also continues research into Concentrating Solar Power (CSP) devices at \$8.9 million, and we are pleased to see the restoration of this Congressional priority in the initial request.

These utility scale, heat-driven solar generators currently provide hundreds of megawatts of clean electricity to the southwest, and the first new plants in more than a decade are now under construction, promising to bring enough electricity on line in the next several years for several thousand new homes—all without further straining our stressed supplies of conventional fuels. Current contracts extend to several hundreds of megawatts of installed capacity.

In large part, this is only possible due to continued improvements in price and performance that have been developed under DOE guidance. The initial large-scale commercial deployment of many technologies refined in the laboratory will inevitably require initial support from many of the researchers that made them possible, and we believe that this budget should prove adequate to ensure that this process occurs, smoothing the transition to multi-gigawatt commercial deployment over the 2006–2015 timeframe.

SOLAR HEATING AND LIGHTING

Unfortunately, the administration request would zero out this program item, an omission which we believe is not in line with the stated goal of the Solar America Initiative: “To accelerate widespread market acceptance of clean solar energy technologies across all U.S. market segments by 2015, reducing our dependence on natural gas and increasing our energy resources.”

This resource is already cost-effective in many cases, and it could have truly significant impact on U.S. energy consumption if a serious deployment program were undertaken: Fewer than 123,000 residential water heaters consume the capacity of one LNG tanker per year, and if just 40,000 American households purchased solar water heating systems in the next 5 years, it would displace 5 million cubic feet of natural gas consumption.

In the past years, demand for solar thermal has grown substantially. However, there remain two principal barriers to the mass-market penetration:

- (1) *Cost*.—The DOE SH&L program, in partnership with industry, recently achieved a significant breakthrough by developing a new low-cost polymer-based solar water heater with a 50 percent cost reduction. Unfortunately, this cutting-edge technology will not be available for deployment in most areas of the country until DOE and NREL’s expertise can be harnessed to resolve cold climate durability and system design issues.
- (2) *Perceived Reliability*.—The potential loss of SH&L program funding for the non-profit Solar Rating and Certification Corporation (SRCC), which has certified solar thermal collectors and systems for performance and quality since 1980, will severely diminish the impact of the new Federal tax credit for solar water heaters. SRCC certification is required for solar water heating systems to be eligible for the tax credit, so the loss of funding creates a bottleneck for the industry and consumers alike. It is also possible that de-funding SRCC could open the door for un-rated and un-certified systems to enter a tax credit-stimulated market—a repeat of the quality issues that plagued the industry in the 1970’s.

Accordingly, we request that this program be continued at the \$5 million dollar annual level.

CONCLUSIONS

In an era of highly increased concern regarding the United States’ energy security, it is time to make a significant commitment to research and development of renewable energy sources. The administration’s proposed budget is a first step in the right direction of substantially increased funding, and a more rigorous and results-driven approach to research, development, and deployment, for these extremely promising resources.

PREPARED STATEMENT OF PRATT & WHITNEY ROCKETDYNE, INC.

EXECUTIVE SUMMARY

America faces several complex and interrelated energy challenges. Three of the most pressing are: (1) excessive dependence on oil imports; (2) escalating energy

prices; and (3) increasing greenhouse gas emissions. Advanced technologies will be required to solve these problems.

Gasification can address all of these challenges. Gasification converts coal, either by itself or blended with biomass and combustible wastes, into syngas, a valuable mixture of hydrogen and carbon monoxide. Syngas can be used to produce electricity, synthetic liquid fuels (such as ultra-clean diesel fuel, gasoline, and ethanol), hydrogen, synthetic natural gas, and chemicals.

These products can all be produced with near-zero emissions, as gasification enables efficient sequestration of carbon dioxide. Gasification can also increase domestic oil and natural gas production, if byproduct carbon dioxide is used for enhanced recovery of oil and coal bed methane (natural gas). Synthetic and alternative fuels produced via gasification can be carbon-neutral when the feedstock is a mixture of coal and biomass, and when the coal-derived carbon dioxide is sequestered.

Recognizing the importance of gasification, the Department of Energy (DOE) is working with industry partners to develop a portfolio of advanced gasification technologies. Pratt & Whitney Rocketdyne (PWR), America's leading rocket engine company, is pleased to participate in this cooperative program. We are adapting rocket engine technologies to develop a compact gasification system that could significantly reduce plant cost and downtime, improve efficiency, and economically gasify all ranks of coal.

Advanced gasification technologies are strategically important to America's economic competitiveness and national security. However, projected DOE funding is inadequate for timely development of these technologies. We therefore respectfully request that the Senate take the following actions:

- Fully fund the President's fiscal year 2007 budget request of \$54 million under the DOE "Advanced Integrated Gasification Combined Cycle" line item.
- Direct DOE to fund continued development of the PWR compact gasification system with at least \$7 million in fiscal year 2007. (This project is identified in the President's budget request.)
- Request DOE to prepare a plan (with proposed budget) to expand development of advanced gasification technologies in fiscal year 2008 and future years.

BACKGROUND

There are currently 116 gasification plants in operation around the world. These plants produce electricity, synthetic natural gas, ultra-clean diesel fuel, hydrogen, fertilizer, chemicals, and many other products from abundant, low cost feedstock such as coal, biomass, and combustible wastes.

These plants are important—but they provide less than 1 percent of the world's energy. Widespread commercial application of the technology has been constrained by economic and technological factors. Existing gasification plants suffer from high capital cost, excessive downtime, and inability to economically gasify all ranks of coal and other available feedstock.

Significant technological advances are required to realize the full potential of gasification. With improved technologies, future gasification plants could produce a substantial fraction of America's electricity, gaseous fuels, and liquid transportation fuels from domestic resources, with near-zero emissions.

DOE ADVANCED GASIFICATION PROGRAM

The Department of Energy and its industry partners are currently developing new technologies that could dramatically reduce the cost of gasification and improve plant reliability and performance. Congress funds this work under the line item "Advanced Integrated Gasification Combined Cycle."

Pratt & Whitney Rocketdyne (PWR), a world-leading rocket engine company, is pleased to participate in this important work. We built the rocket engines that took Americans to the Moon, and brought them safely home. Today, PWR makes the liquid rocket engines that power the Space Shuttle, Delta and Atlas launch vehicles.

With DOE support, PWR is developing a compact gasification system using low-cost rocket engine technologies to reduce gasifier size, capital cost, and downtime, while improving performance, efficiency and feedstock flexibility. This is just one of several technologies supported by DOE under this line item. The four key projects are:

- Southern Company and KBR (Kellogg, Brown, and Root) are developing an advanced Transport Gasifier to reduce the cost of gasification.
- Air Products is developing an ITM (Ion Transport Membrane) air separation system to reduce the cost and improve the efficiency of producing pure oxygen from air.

- Research Triangle Institute (RTI) is developing an advanced, low-cost gas clean-up system, in collaboration with Eastman Chemical.
- PWR is developing the compact gasification system described above, in collaboration with GTI (Gas Technologies Institute) and EERC (Energy and Environmental Research Institute).

These are all potential high-payoff technologies. They are also complementary. For example, the PWR compact gasification system fully utilizes the benefits of Air Product's ITM air separation system and RTI's advanced gas cleanup system, while complementing Southern's Transport Gasifier by gasifying all ranks of coal.

These advanced gasification technologies, in combination with advanced gas turbines, could reduce the cost of Integrated Gasification Combined Cycle (IGCC) power plants from \$1,600 per kilowatt today, to less than \$1,300 per kilowatt, and improve plant efficiency to near 50 percent. If these goals are achieved, IGCC power plants could save U.S. electric power consumers up to \$20 billion annually, reduce coal power plant emissions over 90 percent, and facilitate efficient carbon dioxide sequestration.

These technologies could also enable cost-competitive production of liquid transportation fuels, hydrogen, synthetic natural gas, and chemicals—all from abundant domestic fossil fuels (such as coal and petroleum coke) which can be blended with renewable resources (such as biomass wastes and purpose-grown biomass). Although it is difficult to estimate the cost savings achievable from synthetic and alternative fuels, the payoff could be huge: (1) reduced oil imports; (2) improved national security; (3) reduced air pollution and carbon dioxide emissions; (4) less volatile energy prices; and (5) sustainable economic growth.

The advanced gasification technologies funded by DOE feed into FutureGen and the Clean Coal Power Initiative (CCPI), and are essential to the success of these programs. As an example of this process, the Southern Company is currently scaling up its Transport Gasifier from pilot scale (at Wilsonville, Alabama) to commercial scale in a CCPI project in Orlando, Florida.

PWR GASIFICATION SYSTEM

The PWR compact gasification system uses rapid-mix rocket engine technology to achieve the following advantages over conventional gasification systems:

- 90 percent reduction in gasifier size;
- 50 percent lower capital cost;
- 3–10 percent higher cold gas efficiency;
- 50–90 percent reduction in downtime;
- Feedstock flexibility (potential to gasify all ranks of coal, either by themselves or blended with renewable biomass and combustible wastes);
- Product flexibility (economical production of multiple products, including electricity, hydrogen, liquid fuels, and chemicals);
- Low-cost hydrogen production and carbon dioxide sequestration.

With PWR gasification technology, Integrated Gasification Combined Cycle (IGCC) power plants will be able to produce electricity for about 4 cents per kilowatt-hour. Capital costs will be reduced by as much as \$300 million for a 1,000 megawatt plant. This capital cost reduction, combined with improved plant availability, can save \$1 billion during the first 15 years of operation of such a plant.

The PWR technology is also well-suited for production of hydrogen and sequestration of carbon dioxide, with an expected plant efficiency of about 70 percent and cost approximately \$2.00 per thousand cubic feet. (This is equal to 80 cents per gallon of gasoline equivalent.) Low-cost hydrogen can replace natural gas as fuel for existing combined-cycle power plants and refineries. The resulting decrease in natural gas consumption and carbon dioxide emissions could be substantial. This technology can also provide low-cost, near-zero emission hydrogen for stationary fuel cells, and power the Hydrogen Economy when (and if) practical fuel cell vehicles are developed.

If the price of oil remains high, and if oil imports and global warming continue to be major issues, advanced technologies such as the PWR gasifier will be needed to produce affordable carbon-neutral synthetic fuels from non-petroleum resources. Combining the PWR gasification system with existing Fischer-Tropsch technology enables production of ultra-clean synthetic diesel fuel (and other alternative fuels) for less than the current price of crude oil.

Many industries in the United States are struggling with high natural gas cost, and are therefore interested in industrial gasification to produce syngas and electricity for industrial purposes. The compact, low-cost features of the PWR technology makes it well-suited for industrial gasification, especially when combined with other

advanced gasification technologies under development on the DOE program, such as Air Product's ITM air separation system.

PWR started development of the compact gasification system in late 2004, after a competitive procurement sponsored by the DOE. We are currently testing components and materials, and constructing a cold flow test facility at the Energy and Environmental Research Center (EERC) at the University of North Dakota. Testing at this facility will begin in late 2006. We have also defined a pilot plant, to be located at the Gas Technology Institute (GTI) in Des Plaines, Illinois.

FUNDING STATUS

The President's 2007 budget request includes funds for this project (as well as the 2006 budget). The steps necessary to complete development of the technology include: (1) constructing and operating the pilot plant at GTI; and (2) developing and testing the dry solids pump at EERC. The total government cost share for this entire project is about \$30 million over 5 years, including sunk costs of \$4 million. This is a cost-shared program, and PWR funds a portion of technology development, and all related commercialization activities.

In January 2006, the DOE conducted a peer review of our proposed plan to complete this program. The peer reviewers recommended continuation of the project. In parallel, DOE funded an independent contractor to evaluate the potential economic advantages of our gasification system, and their results confirmed the economic advantages of the PWR compact gasification system.

Nevertheless, in April 2006, DOE informed us that they do not plan to fund the pilot plant and dry solids pump, because DOE does not have adequate funds to develop a new gasification system. We understand that the administration and Congress are under immense pressure to reduce the budget deficit, and to fund other important priorities. However, we believe that this country can—and should—allocate the resources needed to address America's energy problems.

RECOMMENDATIONS

We urge the Senate to provide DOE with adequate resources to develop advanced gasification technologies. Specifically, we request the Senate to take the following actions:

- Fully fund the President's fiscal year 2007 budget request of \$54 million under the DOE "Advanced Integrated Gasification Combined Cycle" line item.
 - Direct DOE to fund continued development of the PWR compact gasification system with at least \$7 million in fiscal year 2007. (This project is identified in the President's budget request.)
 - Request DOE to prepare a plan (with proposed budget) to expand development of advanced gasification technologies in fiscal year 2008 and future years.
- This expanded DOE Gasification Plan should include sufficient funding for: (1) timely completion of on-going advanced gasification projects; and, (2) new initiatives to enable cost-competitive production of synthetic and alternative transportation fuels, as well as electricity, with near-zero emissions.

SUMMARY OF BENEFITS

The benefits from widespread deployment of coal and biomass gasification are substantial for a broad range of constituents:

- America will benefit from enhanced energy security.
- The U.S. economy will benefit from domestically-produced, affordable energy supplies.
- Coal-producing regions, farm States, and forestry regions will benefit from sustainable, environmentally sound utilization of coal and biomass.
- Oil producing regions will benefit because carbon dioxide (produced as a byproduct of gasification) can be used for enhanced oil recovery.
- Refinery regions will benefit as gasification technology enables cost-competitive utilization of refinery wastes and other low-cost feedstock.
- Energy consumers will pay less for electricity, natural gas, and transportation fuels.
- All people on the planet will benefit from a clean environment and a stable climate.

These are clear and compelling reasons to develop and deploy advanced gasification technologies.

Thank you for giving us the opportunity to provide this testimony. With your leadership, America will transform today's energy challenges into tomorrow's opportunities.